Review of Marketing Research

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REVIEW OF MARKETING RESEARCH

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REVIEW OF MARKETING RESEARCH

A Look Ahead

Naresh K. Malhotra

Overview

Review of Marketing Research, now in its third volume, is a recent publication covering the important areas of marketing research with a more comprehensive state-of-the-art orientation. The chapters in this publication will 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 response to the first two volumes has been truly gratifying and we look forward to the impact of the third 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. A wide range of paradigmatic or theoretical substantive agenda 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 hope to 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 will bridge the gap left by current marketing research publications. Current marketing research publications such as *the Journal of Marketing Research* (USA), *Journal of Marketing Research Society* (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 more expository and also focus on implementing new marketing research concepts and procedures. This will also serve to distinguish this publication from the *Marketing Research* magazine published by the American Marketing Association (AMA).

Articles 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

Articles in the First Volume

The inaugural volume exemplified the broad scope of the *Review of Marketing Research*. It contained a diverse set of review articles covering areas such as emotions, beauty, information search, business and marketing strategy, organizational performance, reference scales, and correspondence analysis. These articles 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 conceptualizes 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, and the PIMS paradigm, the Austrian school, and the resource-based view of the firm, and 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.

Articles in the Second Volume

The second volume continued the emphasis by featuring a broad range of topics contributed by some of the topmost scholars in the discipline. The diverse articles in the second volume may 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 incorporates 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).

Articles in This Volume

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

Research on managing customer relationships has the potential to provide a unifying framework for studying diverse marketing issues. Bolton and Tarasi describe how companies can effectively cultivate customer relationships and develop customer portfolios that increase shareholder value. They review the extensive literature on customer relationship management (CRM), customer asset management, and customer portfolio management, and summarize key findings. They examine 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. They describe each process, summarize key findings, identify emerging trends and issues, and identify areas where further research is needed.

Research is needed that reconciles customer-based value creation with market values for firms, builds models to predict sources of value for both the customer and the firm, and develops metrics that can be used to manage sources of value. There is also a need for research on identifying and implementing cross-functional activities that are maximally effective in creating portfolios with desired levels of earnings and risk. In this respect, efforts should be made to investigate how context variables moderate the effectiveness of firm decision variables on business performance outcomes. We know very little about how brand equity, product portfolio decisions, or innovation contribute to customer equity.

Partially filling this gap, Chandrasekaran and Tellis critically review 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 focus 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 consider other models of diffusion and drivers of new product diffusion.

They identify several key findings, and a useful part of their study is the discovery of potential generalizations from past research. They also identify opportunities for future research related to measurement, theories, models, and findings. The literature in this area has generally ignored the problem of measurement. For example, no clear rules are available for the measurement of the

start of the product life cycle. While researchers have identified various drivers for the diffusion of innovations, an integrated theory that either incorporates or differentiates all these drivers is lacking. There is a need to develop an integrated model of sales from commercialization to takeoff, during growth, and after slowdown. While the marketing literature has focused extensively on consumer durables, other categories such as services, software, and network industries should be considered. Diffusion of products using new media such as the Internet can be quite different and deserves systematic investigation. Past research has been limited to successful products, and there is a need to study failed products to understand what aspects of their diffusion led to failure.

Eckhardt and Houston review, compare, and contrast cultural and cross-cultural psychological methods. They present the underlying conceptions of culture that underpin both streams, and discuss various methods associated with each approach. The underlying purpose of cross-cultural approaches is typically to determine whether theories and constructs developed in a North American and West European context apply to people with various cultural orientations. The search is for similarities as well as differences in both behavior and psychological processes. The focus of many cross-cultural researchers is to find universal theories of behavior. An attempt to achieve this goal has been made by finding the boundary conditions for prominent theories in the literature typically developed in North America or Western Europe. Cultural psychology views culture and psychological processes as phenomena that cannot be understood in isolation from one another. Thus, we should not study culture as an independent variable that affects the dependent variable of individual behavior. Cultural psychology seeks to understand people's cognitive, emotional, motivational, and behavioral processes as they are shaped through interaction in a cultural world. The focus of "cultural" research has not typically been culture but rather whether important consumer behavior constructs (e.g., attitudes, intentions, loyalty, etc.) vary across cultures. Eckhardt and Houston identify the consumer research questions best answered using each approach and discuss how each approach informs the other. Finally, they examine 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 his colleagues can be useful in this respect (Malhotra, 2001; Malhotra, Agarwal, and Peterson,1996; Malhotra and Charles, 2002; Malhotra and McCort, 2001; Malhotra et al., 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.

Grewal and Compeau synthesize 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 develop a conceptual framework, using adaptation-level theory and transaction utility theory, that synthesizes 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. Furthermore, it links the effects of price, reference price, and other relevant information cues on consumers' product evaluations and behavioral intentions. The authors also develop theoretical propositions and summarize research evidence related to these propositions from various substantive domains. Some of these propositions have received empirical support, but many have not been tested, thus offering fertile areas for future research. Further research should examine the effects of contextual cues and how they may interact with focal cues to influence consumers' decision-making processes. The way in which the internal reference price is operationalized may affect consumers'

perceptions of value; this issue needs to be addressed. How reference price advertisements and product cues affect consumers' perceptions of their nonmonetary sacrifice and value is another important issue that needs to be researched.

Sayman and Raju provide a review of research on store brands. Their review focuses on integrating research in five areas and identifying directions for future research. These areas and the future research directions in each are as follows:

1. Why do retailers introduce store brands? Future research may try to disentangle and quantify the benefits retailers obtain from store brands.
2. Who buys store brands? Future research that combines purchase data from multiple retailers with demographic, and, more important, psychographic, data may further strengthen our knowledge of store brand buyers.
3. What is the nature of price competition between store brands and national brands? In particular, there seems to be a need to understand when wholesale prices, retail prices, and margins increase or decrease. Some category or retailer factors may moderate price increases and these factors should be identified through systematic investigation.
4. How are store brands positioned and perceived relative to national brands? Studies reviewed by Sayman and Raju provide insight and evidence into the positioning of store brands. More evidence regarding the effects on share, price, and profit of different national brands would be helpful.
5. What are the drivers of store brand success? Sayman and Raju provide us a good understanding of category-, retailer-, and consumer-related factors associated with store brand success. A key research direction may be utilizing and comparing multiple measures of performance, for example, share and profit.

In addition, there is limited theoretical and empirical research regarding optimal counter strategies 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 examine an intrapersonal aspect of language, namely, whether the structure of a language, per se, influences the thoughts of those who speak it. They review empirical research conducted over the past half-century on the effects of language structure on a variety of mental activities. They find 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. Evidence for the influence of language on cognition has shown how a linguistic form (a word, expression, or grammatical structure) might have an impact on information processing, perception, preference formation, and behavior. This influence has been measured across an array of constructs, including attention, recall and recognition memory (both short-term and long-term), information encoding and memory retrieval, categorization, similarity, perceptions and inferences, learning processes, brand attitudes and preferences, brand choice, and everyday patterns of behavior. Merunka and Peterson discuss several substantive and methodological implications of the linguistic relativity hypothesis in the context of consumer research. For example, languages may facilitate or impede particular cognitive activities such as category formation and learning. Research knowledge regarding, or incorporating, psychological constructs based on information acquired in one language may not be fully transportable to another language. Thus, research attempting to identify "universals," at least in the realm of cognition and emotions, may be misdirected, and resources may be better spent identifying boundary conditions or contingencies that permit meaningful generalizations across languages.

Commonly used scales in consumer research that have been constructed in an English-language context should be labeled "for English-speaking applications" and, if employed in non–English-speaking applications, extreme caution should be exercised. Furthermore, traditional translation techniques may not be able to produce data that are truly equivalent, especially at the conceptual level, and purely statistical attempts to assess equivalency may not be sufficient. 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.

Several factors including the culture of consumption, the image economy, the production technology, and the consumer demand for moving and still images of consumption have created conditions that require us to get visual. Belk discusses the implications of this phenomenon for research, teaching, and communicating. He identifies basic opportunities, threats, and consequences of becoming visual. Several techniques for collecting visual data are discussed in the realm of interviewing as well as observation. The technique of visual elicitation in conducting interviews uses a visual representation of a person, place, object, or situation as the focus of an interview question; often photographic stimuli add richness to the interview. In another set of visual projective techniques, rather than giving informants the stimulus, they are asked to create it, for example, by making collages. Another quite common use of the visual in marketing research is to videotape interviews with individuals or groups. In the realm of observation, marketing researchers have used photo- and video-aided ethnography to study diverse phenomena. Coolhunting involves sending out young researchers with cameras or camcorders to detect the latest cool fashions, music, grooming, dance, and other aspects of cool consumer culture. Another form of visual observation is the use of archives of visual images in order to do historical consumer research.

Not only is the collection and analysis of visual data gaining ground but it is also possible to distribute visual data more easily and inexpensively than ever before. There are some special issues in conducting visual research, such as ethical considerations between the researcher of visual images and the subject, and special care is needed to ensure that the subject knows and agrees to the uses to which these images will be put. 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.

It is hoped that collectively the chapters in this volume will substantially aid our efforts to understand, model, and predict both the firm and the consumer and provide fertile areas for future research.

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Review of Marketing Research

Chapter 1

MANAGING CUSTOMER RELATIONSHIPS

Ruth N. Bolton and Crina O. Tarasi

Abstract

The customer relationship management (CRM) literature recognizes the long-run value of potential and current customers. Increased revenues, profits, and shareholder value are the result of marketing activities directed toward developing, maintaining, and enhancing successful company–customer relationships. These activities require an in-depth understanding of the underlying sources of value that the firm both derives from customers, as well as delivers to customers. We built our review from the perspective that customers are the building blocks of a firm. In order to endure long-term success, the role of marketing in a firm is to contribute to building strong market assets, including a valuable customer portfolio. CRM is an integral part of a company's strategy, and its input should be actively considered in decisions regarding the development of organizational capabilities, the management of value creation, and the allocation of resources. CRM principles provide a strategic and tactical focus for identifying and realizing sources of value for the customer and the firm and can guide five key organizational processes: 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. For each organizational process, we identify some of the challenges facing marketing scientists and practitioners, and develop an extensive research agenda.

Companies are increasingly focused on managing customer relationships, the customer asset, or customer equity. Customer relationship management (CRM) explicitly recognizes the long-run value of potential and current customers, and seeks to increase revenues, profits, and shareholder value through targeted marketing activities directed toward developing, maintaining, and enhancing successful company-customer relationships (Berry, 1983, p. 25; Gronroos, 1990, p. 138; Morgan and Hunt, 1994, p. 22). These activities require an in-depth understanding of the underlying sources of value the firm both derives from customers and delivers to them.

The purpose of this chapter is to describe how companies can effectively cultivate customer relationships and develop customer portfolios that increase shareholder value in the long run. We review the extensive literature on customer relationship management, customer asset management, and customer portfolio management, and summarize key findings. The chapter has three major components. First, we define CRM, describe how marketing thinking about CRM has evolved over time, and assess whether CRM principles and systems have improved business performance (to date). Second, we examine (in detail) five organizational processes that we believe are necessary for effective CRM: making strategic choices that foster organizational learning, creating value

for customers and the firm, managing sources of value (acquisition, retention, etc.), investing resources across functions, organizational units, and channels, and globally optimizing product and customer portfolios. We describe each process, summarize key findings, identify emerging trends and issues, and predict likely future developments (both theoretical and methodological). Our concluding remarks make recommendations about areas where further research is needed.

Perspective on the Evolution of Customer Relationship Management

Current Definition of CRM

After surveying many alternative definitions of CRM, Payne and Frow (2005, p. 168) offer the following comprehensive definition, which we will use to frame the discussion in our chapter:

> CRM is a strategic approach concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments. CRM unites the potential of relationship marketing strategies and IT [information technology] to create profitable, long-term relationships with customers and other key stakeholders. CRM provides enhanced opportunities to use data and information to both understand customers and co-create value with them. This requires a cross-functional integration of processes, people, operations and marketing capabilities that is enabled through information, technology and applications.

Researchers have emphasized different CRM issues depending on whether they are considering a business-to-consumer or business-to-business context. However, we focus on conceptual and methodological principles that are applicable in both contexts, highlighting noteworthy exceptions.

CRM vis-à-vis the Domain of Marketing

Marketing theory has frequently provided guidance on how firms should react to opportunities, but marketing actions are also able to change the environment and create opportunities (Zeithaml and Zeithaml, 1984). Marketing—considered as a general management responsibility—plays "the crucial roles of (1) navigation through effective market sensing, (2) articulation of the new value proposition, and (3) orchestration by providing the essential glue that ensures a coherent whole" (Hunt, 2004, p. 22). CRM enhances these capabilities because it is "the outcome of the continuing evolution and integration of marketing ideas and newly available data, technologies and organizational forms" (Boulding et al., 2005).

CRM principles and systems help organizations to focus on the dual creation of value: the creation of value for shareholders (via long-term firm profitability) and the creation of value or utility for customers (Vargo and Lusch, 2004). These objectives are congruent because relationships represent market-based assets that a firm continuously invests in, in order to be viable in the marketplace. Strong relationships are associated with customer loyalty and/or switching costs, which create barriers to competition. Thus relationships provide a differential advantage by making resources directed to customers more efficient. For example, loyal customers are more responsive to marketing actions and cross-selling (Verhoef, 2003).

Marketers sometimes use the term "customer asset," but customers and assets do not have identical features. The mind-set associated with "owning" customers is dangerous because customer

relationships must be carefully managed and customer loyalty must be earned (Rust et al., 2004). However, the customer base is certainly a market-based asset that should be measured, managed, and tracked over time (Bell et al., 2002). Srivastava, Shervani, and Fahey (1998) discuss how market-based assets, such as customer or partner relationships, can increase shareholder value by accelerating and enhancing cash flows, lowering the volatility and vulnerability of cash flows, and increasing the residual value of cash flows. Their framework links customer relationship management with business performance metrics.

Origins in Relationship Marketing

The foundation for the development of CRM is generally considered to be relationship marketing, defined as marketing activities that attract, maintain, and enhance customer relationships (Berry, 1983). Gronroos (1990, p.138) argues for the importance of relationships in the marketing context. He proposes a definition for marketing, namely, that marketing is "to establish, maintain and enhance relationships with consumers and other partners, so that the objectives of the parties involved are met. This is achieved by a mutual exchange and fulfillment of promises." However, although the terms "CRM" and "relationship marketing" are relatively new, the phenomenon is not (Gummesson, 1994, p. 5; 2002, p. 295). Marketers have always been preoccupied with defensive strategies aimed at increasing customer retention, thereby increasing revenues and profitability (Fornell and Wernerfelt, 1987). For example, writing in the *Harvard Business Review*, Grant and Schlesinger (1995, p. 61) argue that the gap between organization's current and full-potential profitability is enormous, and suggest that managers ask themselves: "How long on average do your customers remain with the company? [and] What if they remained customers for life?" During the same time period, a growing literature has focused on the "service profit chain" linking employee satisfaction, customer satisfaction, loyalty, and profitability (e.g., Heskett, Sasser, and Schlesinger, 1997; Liljander, 2000; Reichheld, 1993).

Emergence of Customer Equity and Early Customer Relationship Models

This perspective naturally evolved and expanded to consider the management of customer equity or the value of the customer base. Initially, researchers were primarily concerned with the allocation of resources between customer acquisition and retention (Blattberg and Deighton, 1996). Generally, the management of customer equity requires that organizations use information about customers and potential customers to segment them and treat them differently *depending on their future long-term profitability* (Blattberg, Getz, and Thomas, 2001; Peppers and Rogers, 2005; Rust, Zeithaml, and Lemon, 2000). Notably, firms must go beyond traditional market segmentation activities, such as customizing offerings (i.e., goods or services) and efficiently managing resources to achieve profitability criteria. Instead, firms must identify and acquire customers who are not only willing to accept the firm's offer or value proposition—but also provide value for the company when they do (e.g., Cao and Gruca, 2005; Ryals, 2005).

Marketers were quick to recognize that the value of the customer asset (i.e., the value a customer or potential customer provides to a company) is the sum of the discounted net contribution margins of the customer over time—that is, the revenue provided to the company less the company's cost associated with maintaining a relationship with the customer (Berger and Nasr, 1998). Early applications of CRM systems typically utilized models that predict (rather than explain) future customer behavior or profitability. For example, in an early paper, Schmittlein and Peterson (1994) use past purchase behavior—that is, data on the frequency, timing, and dollar value of past purchases—to

predict likely future purchase patterns. They were able to show that their "customer base analysis" was effective in predicting purchase patterns for different key industrial buying groups.

For about a decade, relatively narrow CRM systems coexisted, rather uneasily, with broader, strategically meaningful conceptualizations of CRM as a "strategic bridge between information technology and marketing strategies aimed at building long term relationship and profitability" (Ryals and Payne, 2001, p. 3). Modelers frequently applied customer lifetime value (CLV) concepts in direct marketing, database marketing, or electronic commerce contexts (Ansari and Mela, 2003; Bult and Wansbeek, 1995; Elsner, Krafft, and Huchzermeier, 2004).[1] Progress was made toward identifying which variables are the "best" predictors of customer lifetime profitability (in a given study context). For example, Reinartz and Kumar (2003) compare traditional models that consider frequency, timing, and monetary value with models that show how managerial decision variables influence the profitability of customers over time—and show that the latter are superior. Nevertheless, most applications (to date) have relied on estimates of current customer profitability, rather than future customer profitability.

Customer Relationship Management and Business Performance

Marketing Metrics

The challenges of applying CRM principles were exacerbated as managers and researchers turned their attention to "metrics" or the measurement of the impact of marketing on business performance (cf. Lehmann, 2004). Most popular measures of current CRM systems are outcome measures: number of acquired customers, "churn" as a percentage of the customer base (the inverse of the customer retention rate), the dollar value of cross-selling, the percentage increase in customer migration to higher margin products, changes in individual customer lifetime value (CLV), and so forth. Any single outcome measure provides an incomplete and (often) short-run assessment of the firm's success at creating value for both customers and shareholders (Boulding et al., 2005). Most dangerously, optimizing a small number of outcome measures may lead to core rigidities (Atuahene-Gima, 2005; Leonard-Barton, 1992) that undermine the organization's core capabilities and lead to business failure. For example, there are numerous stories of firms that have focused on customer acquisition at the expense of customer retention activities or vice versa.

One way to assess the impact of marketing on business performance is to forecast the lifetime value of individual customers under alternative scenarios, aggregating across customers, and identifying the "best" set of scenarios or set of organizational actions. This approach seems "doable," but it can be challenging to move from the calculation of individual customers' lifetime revenues to individual customers' profitability. For example, Niraj, Gupta, and Narasimhan (2001) demonstrate this method for an intermediary in a supply chain, such as a distributor, where costs are incurred at each step in the supply chain and there is heterogeneity in purchasing characteristics.

Initial Failure of CRM "Systems"

A constructive distinction is often missing in CRM frameworks. There is a difference between CRM systems—software that integrates relevant customer information (sales, marketing, etc.) with product and service information—and CRM processes, for example, the cross-functional steps required to ensure customer retention and effectiveness of marketing initiative, such as a continuing dialogue with customers across all contact points and personalized treatment (Day, 2000). In other words, CRM systems are intended to support CRM processes, which are meant to enhance the value of the customer relationship.

CRM starts from the fundamental assumption that the bounded rationality of humans charged with initiating, maintaining, and building relationships can be supported and enhanced by specific organization capabilities, namely, the intelligent utilization of databases and information technology. However, many organizations' initial experiences were disappointing, especially in the short run. The *Economist* (2003, p. 16) describes the experiences of financial services organizations and pessimistically observes that:

> The three year economic downturn has cooled even Wall Street's ardor for fancy new IT [information technology] gear. . . . The problem is that most IT projects are lengthy affairs and notoriously "back loaded." . . . Few things in technology have promised so much and delivered so little as "customer (or client) relationship management" (CRM) software. In implementing CRM, insiders reckon that four out of five such projects fail to deliver the goods.

These failures typically arose from a narrow application of CRM principles. For example, Rigby, Reichheld, and Schefter (2002) identified four situations that independently and together result in failed CRM systems: (1) implementing CRM without having in place a clear customer strategy, (2) assuming that CRM has to match organizations' current practices, and not enhance them, (3) assuming that CRM technology and not CRM strategy matters, and (4) using CRM to stalk, not to woo customers. In other words, many so-called CRM systems used technology (both hardware and software) to optimize the usage of information within functional silos, without a relational orientation, creating obstacles to organizational learning and the dual creation of value. Thus, it is not particularly surprising that they identified solutions that were suboptimal—and even unprofitable—in the long run.

More Nuanced Approaches to Evaluating CRM Systems and Technology

Research has established that CRM systems can improve intermediate measures of business performance. For example, Mithas, Krishnan, and Fornell (2005) study the effect of CRM applications on customers and find out that the use of CRM systems positively impacts customer satisfaction, both directly and through improved customer knowledge. Despite this fact—and the common belief that more and better customer knowledge can only benefit a firm and its customers—the financial return on large investments in CRM technology has been questioned. For example, as Reinartz, Krafft, and Hoyer (2004, p. 293) report, commercial studies "provide some convergent validity that approximately 70 percent of CRM projects result in either losses or no bottom line improvements." Contrary to such reports, their own empirical investigation indicates that companies that implemented CRM processes performed better not only in relationship maintenance but also in relationship initiation.

A critical issue for many organizations is that the adoption of CRM technology is fraught with implementation challenges, including information technology design, procedure, and process issues, difficulties in maintaining accurate and current information, obstacles arising from interfaces that are not user friendly, and so forth (e.g., Johnson, Sohi, and Grewal, 2004; Meuter et al., 2005; Morgan, Anderson, and Mittal, 2005; Winer, 2001). For this reason, we must distinguish between technology-driven implementation—which results in user frustration—and customer-driven implementation—which has high user involvement; the latter has resulted in successful operational CRM systems. A recent study by Jayachandran and colleagues (2005) estimates an interaction effect showing that customer relationship performance for a diverse sample of businesses is enhanced

by organizational information processes when a high level of technology is used. In other words, technology use for customer relationship management—by moderating the influence of organizational information processes on customer relationship performance—performs a supportive role only. They show that effective organizational information processes (i.e., effective communication, information capture, and information integration, as well as access and use of information) enhance the effectiveness of CRM technology in achieving business success.

CRM Principles and the Role of Organizational Capabilities and Processes

After more than twenty years of research on CRM, the accumulated evidence indicates that the application of CRM principles yields positive financial outcomes. In their introduction to the *Journal of Marketing*'s special section on CRM, Boulding and colleagues (2005) argue that CRM improves business performance in a wide variety of industry settings. A striking example is described in a case study by Ryals (2005), showing that a business unit was able to achieve a 270 percent increase in business unit profits above target by implementing some straightforward CRM procedures.

Why do firms experience such widely varying degrees of success from applying CRM? The implementation of CRM systems or technology alone is doomed to fail, because the collection of the data does not imply the existence of useful information that will be disseminated and acted upon appropriately. Boulding and colleagues (2005) argue that, holding fixed the level of CRM investment, the effectiveness of CRM activities depends on (a) how CRM is integrated with the existing processes of the firm and (b) the firm's preexisting capabilities. In other words, organizations that have already developed learning capabilities and effective information processes are more likely to improve their business performance by adopting CRM systems. They are able to interpret information correctly and act on it in a manner to increase value for both the customer and the firm.

In a recent *Harvard Business Review* article, Gulati and Oldroyd (2005) observe that the implementation or CRM systems must serve the purpose of getting closer to customers, and that in order to succeed the company as a whole has to engage in a learning journey—learning about the customer and about the business and how its way of doing business can be improved. If this activity is regarded as a departmental or functional responsibility, CRM efforts will fail. The authors identify four stages in the evolution of a successful CRM implementation: communal coordination (gathering information); serial coordination (gaining insight from customers' past behavior); symbiotic coordination (learning to predict future customer behavior); and integral coordination (real time response to customer needs). This evolutionary and transformational process takes time, resources, and patience, but the implementation of each of the stages should provide visible end results. Harrah's started this process under Gary Loveman's leadership in 1998 and, after a constant evolution that took more than seven years and involved all employee levels, it enjoyed impressive growth compared to competitors. Furthermore, the deep understanding of the customer provided new levers for future growth (Gulati and Oldroyd, 2005; Gupta and Lehmann, 2005).

In summary, marketing science and practice has moved away from simplistic evaluations of investments in CRM technology or systems to consider the role of firms' preexisting capabilities and organizational processes. For this reason, the remainder of this article frames our discussion of what we know about CRM in terms of five interrelated organizational processes: making strategic choices that foster organizational learning, creating value for customers and the firm, managing sources of value (acquisition, retention, etc.), investing resources across functions, organizational units, and channels, and globally optimizing product and customer portfolios. We discuss how each

Figure 1.1 **Customer Relationship Management Processes**

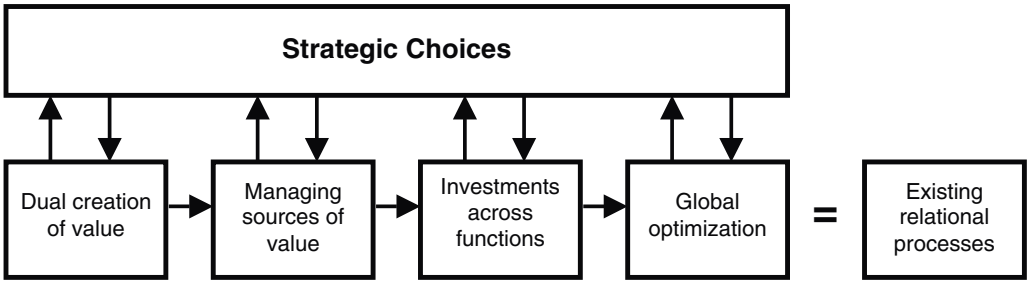

Table 1.1

Processes	
Strategic choices	• Organizational information processes • Organizational learning
Dual creation of value	• Creating value for customers • Valuing customers
Customer portfolio management	• Acquisition • Retention • Increased margins from relationship expansion activities (e.g., product usage, cross-selling) • Divestment
Allocation of resources across functions, channels, and organizational units	• Employee selection and training • Service quality • Customer management effort • Managing customer contacts • Customer equity models
Global optimization models	• Segmentation • Matching product portfolio and customer portfolio • Risk/return management

process influences the effectiveness of CRM, and describe its challenges. The processes and their relationships are depicted in Figure 1.1; subtopics are listed in Table 1.1. We begin by describing research regarding how organizations' strategic choices influence the effectiveness of CRM in enhancing business performance, which provides a conceptual rationale for our framework.

Strategic Choices

In a recent executive roundtable discussion, executives from IBM, Yellow-Roadway, Luxottica Retail (Lens Crafters and Sunglass Hut), McKinsey & Company, and Cisco Systems stated that that there were immense opportunities for the transformation of organizations through the integration of business processes and the use of technology to generate competitive advantage, cost-saving efficiencies, and an enhanced customer experience. Executives in Europe and North America strongly believe that successful organizations require a cross-functional process-oriented approach that positions CRM at a strategic level (Brown, 2005; Christopher, Payne, and Ballantyne, 1991; Payne and Frow, 2005). This notion is consistent with empirical evidence showing that firms' prior strategic commitments (as opposed to their general market orientation) have impressive effects on the performance of their CRM investments in a retailing context (Srinivasan and Moorman, 2005).

Organizational Learning

Based on extensive field interviews, Payne and Frow (2005) identify five key cross-functional CRM processes: a strategy development process; a value creation process; a multichannel integration process; an information management process; and a performance assessment process. They argue that an organization's strategy development process—a precursor for subsequent processes—requires a dual focus on its business strategy and customer strategy, and that how well the two interrelate will fundamentally affect the success of its CRM strategy.

In particular, organizational information processes—information reciprocity, information capture, information integration, information access, and information use—relevant to CRM can play a vital role in enhancing business performance (Jayachandran et al., 2005). This observation should not be surprising because the primary outcome of the adoption of CRM technology is the generation of an enormous database describing customer profiles, sales, costs, operations, and so forth. If intelligently processed and interpreted, these data can provide information regarding the value of customers and the effectiveness and efficiency of marketing actions (Berger et al., 2002). Each customer interaction is (or should be) part of an iterative learning process both from the customer and the company points of view (Ballantyne, 2004).

Challenges

Our review of prior research suggests two fruitful areas for future research. First, marketing scientists and practitioners have acknowledged that CRM technology alone cannot sustain a competitive advantage. The failure of many firms to reap economic rewards from investments in CRM technology is a symptom of an underlying problem, namely, how to create a coordinated strategy that integrates business processes and generates an enhanced customer experience (i.e., the creation of value for customers), competitive advantage, and cost saving efficiencies (i.e., the creation of value for the firm). The value a company has to offer to its customer is derived not only from the quality of its offerings but also from its relational characteristics and supplier characteristics (Crosby, Gronroos, and Johnson, 2002; Menon, Homburg, and Beutin, 2005; Storbacka, Strandvik, and Gronroos, 1994). For this reason, appropriate organizational structures and processes for a given firm are likely to depend on its business environment (i.e., they will be contingency-based). Thus, there is a critical need for more research on how CRM principles can guide strategic choices that improve business performance in different business contexts, thereby bridging the functional silos that exist in many organizations. Otherwise, firms will be unable to profitably exploit innovations in technology and business processes—for example, radio frequency identification technology.

Second, firms' experiences in implementing CRM technology have shown that transforming data into useful information—especially learning from past experience—is challenging for many organizations. Ambler (2003, p. 21) points out a paradox: "Marketing is the means whereby a company achieves its key objectives," but quantifying the results of marketing actions is extremely challenging. CRM systems can provide the tools for accurately measuring marketing outcomes, where "clarity of goals and metrics separate the professional from the amateur" (Ambler, 2003, p. 17). Gupta and Lehmann (2005) have suggested a set of metrics that is based on a profitability tree and is suitable for strategic decision making. It is important to recognize that different metrics are required for different purposes. Hence, research is required to identify metrics linked to future profitability because, without making sense of the interrelationships of marketing variables, it will be impossible for marketing to evolve from a function in a company to a guiding principle (Hunt

2004). In addition, research is required to show how metrics can be *used* to manage value creation for customers and for the firm. Furthermore, at an implementation level, research is required to develop "interlocking" metrics that coordinate decision making at strategic and tactical levels, as well as decision making across channels and organizational units.

Dual Creation of Value

Dual creation of value requires that the firm simultaneously create value for customers and value for shareholders. First, we discuss how to create value for customers. Second, we consider how managers can assess the value of individual customers or segments, and then aggregate them to calculate the value of the customer base to the firm. We identify the research challenges associated with each task.

Creating Value for Customers

A common trait of many studies is a focus on measuring CRM's impact on the end results, such as profits and shareholder value, without studying the relations among processes and connections among variables (Boulding et al., 2005). Return on investment is certainly a measure of success, but—without a profound understanding of how relational processes can operate effectively—success from CRM initiatives is elusive. Although the specifics will be unique to each firm, prior research provides a conceptual framework for understanding how relational processes create value for customers. Specifically, research on the antecedents of service quality, customer satisfaction, trust, and commitment provide insights for managers (Berger et al., 2002; Rust, Lemon, and Zeithaml, 2004).

Relationships with Consumers

Research on CRM is a natural evolution of marketers' longstanding interest in understanding how relationships with individual customers are created, built, and sustained over time (Bhattacharya and Bolton, 2000). It began with investigations of how customers formed their assessments of products (goods and services). This research stream is extensive; therefore, an extensive discussion of the antecedents of customer assessments (e.g., perceived service quality and customer satisfaction) as well as the implicit bonds (e.g., legal, economic, technological, knowledge, social, etc.) (Liljander and Strandvik, 1995) is beyond the scope of this section. Notably, customer satisfaction literature developed around the idea that satisfaction is influenced by the difference between expectations and experience (Oliver, 1980, 1999). Service quality literature developed along parallel lines (cf., Parasuraman, Zeithaml, and Berry, 1985, 1988). For example, Boulding and colleagues (1993) brought together two streams of service quality research in showing that both expectations as predictions (expectations about what *will* happen) and normative expectations (expectations about what *should* happen, often based on communications from the service provider) are important in determining perceived service quality. This stream of literature is extremely useful in helping researchers build theory-based models of customer behavior (Bolton and Lemon, 1999).

Business-to-Business Relationships

Researchers focusing on CRM principles have been especially interested in interorganizational relationships because—until the recent advent of electronic commerce with its potential for

precise (one-to-one) targeting of marketing activities to customers—business-to-business (B2B) relationships have been the most fruitful context for the application of the principles of customer relationship management. This stream of research has tended to have a strategic orientation, reflecting the notion that a coherent set of cross-functional activities is required to create, build, and sustain relationships (Ford, 1990).[2] Two important focal constructs in understanding inter-organizational relationships are trust and commitment (Morgan and Hunt, 1994). For example, Anderson and Weitz (1992) consider how commitment depends on self-reported and perceived "pledges" (i.e., idiosyncratic investments and contractual terms), communication, and relationship characteristics. Their research is particularly noteworthy because they studied 378 dyads—that is, pairs of manufacturer and industrial distributors—so that they were able to model the antecedents and consequences of each party's perception of the other party's commitment. Recent research has extended our knowledge of interorganizational relationships through studies of organizational norms, contracting, opportunism, and so forth (Heide and Weiss, 1995; Kalwani and Narayandas, 1995; Kumar and Corsten, 2005; Narayandas and Rangan, 2004; Wuyt and Geyskens, 2005). B2B decisions are especially complex because multiple people participate in the purchase decision (e.g., purchasing manager, end user, decision maker), and interactions occur at multiple levels (e.g., contract level, organizational unit level, firm level). This research stream is very helpful in building theory-based models of organizational buying behavior. Most prior research has been conducted at the enterprise level, using key informants; future research is required that uses information obtained from multiple informants as well as from multiple levels within the buying organization (Bolton, Lemon, and Bramlett, 2006).

Using Customer Assessments of Relationships to Explain Behavior

Numerous studies have shown that self-reports of customer assessments (such as satisfaction) can explain customer behavior. Bolton (1998) models the duration of the customer–firm relationship at the individual level. She finds that prior cumulative satisfaction is weighed more heavily than satisfaction from recent events, and that satisfied customers have longer relationships and generate greater revenues and profits (for contractual relationships). However, Verhoef (2003) finds that, if customer assessments primarily reflect cognition (without an affective component), it may prove difficult to predict customer retention or share of the wallet. At the aggregate level, Gruca and Rego (2005) use data from the American Customer Satisfaction Index and Compustat to show that customer satisfaction plays a major role in increasing cash flow and enhancing its stability.

Challenges

CRM systems operate at the customer–firm interface, and firms frequently use information from customers to create and deliver valuable offerings to them. Customers are likely to be willing to reveal private information if they derive "fair" value from exchanges with the firm. However, firms may behave opportunistically (extracting all economic surplus), creating mistrust among customers, so that they act strategically when they provide information or participate in transactions with the firm (Boulding et al., 2005). For example, customers might retaliate against perceived unfairness by providing inaccurate information, generating unfavorable word of mouth, switching to the competition, or boycotting the firm. Consequently, successful implementation of CRM principles requires that firms carefully consider issues related to privacy and fairness (Boulding et al., 2005). Additional research is required on how these constructs influence business performance in the long run.

Mediating constructs, such as perceived fairness, satisfaction, and commitment, are important precursors of customer behavior. Moreover, prior research has shown that self-report measures obtained from survey data can be used to predict customer behavior (e.g., Bolton and Lemon, 1999). Researchers have also used survey measures *as proxies* for consumer behavior, assuming that the antecedents of the proxy are identical to the antecedents of the target variable. However, there is a significant body of literature that shows otherwise (Chandon, Morwitz, and Reinartz, 2005; Morwitz, 1997; Morwitz and Schmittlein, 1992; Seiders et al., 2005). For example, Mittal and Kamakura (2001) analyze the influence of satisfaction on behavioral intentions and actual behavior and find that the effect of satisfaction on behavioral intentions is nonlinear with decreasing returns, whereas its effect on behavior is nonlinear with increasing returns. For this reason, marketers must be cautious about using only survey data to study how relational processes create value for customers. Hence, there is also a need for additional research to develop more longitudinal models of customer behavior (Bolton, Lemon, and Verhoef 2004).

Value of Customers to the Firm

Customer Valuation

The value of the customer asset (i.e., the value that the customer provides to a company) is the sum of the customer's discounted net contribution margins over time—that is, the revenue provided to the company less the company's cost associated with maintaining a relationship with the customer (Berger and Nasr, 1998). Naturally, a company cannot perfectly predict the cash flows associated with an individual customer, but it can calculate the expected value of the cash flows (adjusting for risk) associated with an individual customer conditional on the customer's characteristics, the company's planned marketing actions, and environmental factors (Hogan et al., 2002). For example, Pfeifer and Bang (2005) propose a model of calculating the mean CLV taking into account the fact that customers have not completed their purchasing cycle and therefore any mean calculation of their value is inaccurate because it does not include future purchases. They use a nonparametric method to compute mean CLV across all customers, to be used as guidance for the appropriate level of investment in customers.

Gupta, Lehmann, and Stuart (2004) propose forecasting CLV by decomposing it into three underlying sources: customer acquisition (i.e., trial), retention (repeat purchase behavior), and gross margins (influenced cross-buying, cost structure, etc.). They demonstrate that the basic calculations are relatively straightforward. Research has shown that the CLV framework can be used to generate estimates of the future profitability of individual customers—given certain marketing actions and competitive conditions—and to identify optimal allocations of resources (cf., Jain and Singh, 2002; Kumar, Ramani, and Bohling, 2004). In contrast, substantial empirical evidence—using rigorous holdout sample procedures—indicates that measures of the past profitability of individual customers are poor predictors of future customer profitability (Campbell and Frei, 2004; Malthouse and Blattberg, 2005).

Forecasting Sources of CLV

To ensure accuracy, it is recommended that estimates of the revenue sources of CLV should be broken down to the customer or cohort or segment level (rather than the firm level). Customer-level forecasts of each source are preferable for five reasons (Gupta and Lehmann, 2005, pp. 7–9). First, customer-level profitability can be decomposed into its underlying sources—customer acquisition,

retention, and margin—which are amenable to managerial action. Second, by preparing forecasts of each underlying source (rather than extrapolating firm-level historical data), managers can explicitly account for changes over time in the underlying sources of profitability, thereby identifying turning points. For example, a firm might discover that its constant earnings over the past few years are the net result of increases in customer acquisition rates and decreases in margins. Further analysis might reveal that customer acquisition will slow down, causing a decline in future earnings. Third, projected customer revenues can take into account any effects of cross-selling (which increase margins) and word-of-mouth. Fourth, the effect of a planned marketing action will be different for each CLV source: acquisition, retention, and margins (Bolton, Lemon, and Verhoef, 2004). For example, Thomas and Reinartz (2003) show that the amount of direct mail sent has an effect on cross-buying opposite to that on purchase frequency. Fifth, without considering customers' migratory behavior, customers will be undervalued since they are considered lost when they switch to competition and they are accounted for as new customers when they switch back (for a model of accounting for switching behavior, see Rust et al., 2004).

To calculate CLV and identify the most profitable customers, the company must forecast the cost to serve a customer as well as revenue sources. As Kaplan and Narayanan (2001) point out, the cost to serve customers can vary dramatically: 20 percent of customers who are most profitable can account for 150 percent to 300 percent of profits, while the 10 percent who are least profitable may lose 50 percent to 200 percent of profits. Under these conditions, it is necessary to measure the real profitability of customers and (if necessary) take corrective actions to forestall losses (either by "firing" the unprofitable customers or by adopting solutions to make the relationship profitable).

Firm Valuation

Recent research has shown that the CLV framework (i.e., using forecasts of acquisition, retention, and margins) can be used to calculate the value of the firm's current and future customer base. Gupta, Lehmann, and Stuart (2004) use publicly available information from annual reports and other financial statements to calculate a customer-based valuation of five companies. They compare their estimates of customer value (post-tax) with the reported market value for each of the companies. Their estimates are reasonably close to the market values for three firms, and significantly lower for two firms (Amazon and eBay). They infer that these two firms either are likely to achieve higher growth rates in customers or margins than they forecast, or they have some other large option value that the CLV framework does not capture.

Challenges

Berger and colleagues (2002) discuss four critical and interrelated actions required of firms that wish to understand how their actions affect the value of their customer assets: (1) create a database; (2) segment based on customer needs and behavior; (3) forecast CLV under alternative resource allocation scenarios; and (4) allocate resources. Although the challenges of creating an integrated database cannot be overestimated, they are primary related to cost and implementation issues. In contrast, forecasting customer-level CLV is a significant technical challenge for four reasons.

First, the forecasts should reflect changes in customer behavior in response to changes in organizational decisions and the environment. To make CLV calculations tractable, prior research has made strong implicit assumptions about customer behavior and marketing programs (e.g., Berger and Nasr, 1998; Blattberg and Deighton, 1996; Dwyer, 1989; Rust et al., 2004). For example, researchers frequently assume fixed marketing programs, deterministic retention rates,

and stable switching patterns among competitive offerings. Additional research is required to relax these assumptions in practical situations. For example, Lewis (2005) estimated a structural dynamic programming model that accounts for the effects of marketing variables, past purchasing activity, consumer expectations of future promotions, and preference heterogeneity on consumer behavior regarding online grocery purchases. The model was used to simulate customer response to marketing programs over an extended time period, thereby providing an estimate of customer value that is directly connected to organizational decisions. He found that, relative to a holdout sample, the simulation-based forecasts outperformed standard methods in terms of absolute error and were better able to account for variation in long-term values in a heterogeneous customer base. He was also able to estimate the long-term consequences of alternative pricing and promotion strategies.

Second, different customers will value the same product differently, and they will have different acquisition rates, retention rates, and margins (due to cross-buying); therefore, forecasting models must account for customer heterogeneity (cf., Chintagunta and Prasad, 1998; Schmittlein and Peterson, 1994). Third, it will be necessary to allocate costs to individual customers. In direct marketing contexts, firms are able to assign the costs of direct communication, delivery of the product, and promotions to individual customers (Berger and Nasr-Bechwati, 2001; Dwyer, 1989; Keane and Wang, 1995). However, in many industries, firms must create methods for accurately attributing the indirect costs of marketing actions to individual customers or customer segments. Berger and colleagues (2002) point out that cost allocation can be particularly challenging for firms that invest in programmatic efforts, such as service improvement efforts or investments in physical infrastructure.

A fourth challenge is to understand and incorporate competitive effects on customer acquisition and retention. Accounting for competitors' acquisition campaigns might explain customer behavior in most markets. Optical scanner data provide competitive information in retail environments, but information about competitive behavior is seldom available in other contexts.

Managing Sources of Value

Organizations can manage sources of value by acquiring and retaining the most desirable customers; expanding relationships through the stimulation of usage, upgrades, and cross-buying; improving their overall profitability by adjusting prices or managing costs; and managing the customer and product portfolios. Since not all customers are equally profitable, investments in customers should be based on their profit potential, as illustrated in Table 1.2. Firms should acquire customers in the upper-right quadrant and divest customers in the lower-left quadrant. Vulnerable customers may defect to competitors unless the firm develops an appropriate marketing program to retain them; free riders should receive lower product quality and higher prices.

These strategies require the firm to develop marketing programs targeted at individual customers or segments that influence acquisition, retention, and margins (via cross-buying), thereby maximizing CLV and value for customers. Marketers have developed a substantial body of knowledge about how firm actions influence customer behavior. A useful summary of this literature is provided by Bolton, Lemon, and Verhoef (2004), who identify six categories of marketing decision variables that can be used to influence customer behavior and CLV: price, service quality programs, direct marketing promotions, relationship marketing instruments (e.g., rewards programs), advertising communications, and distribution channels. In the following paragraphs, we briefly summarize some key considerations concerning how these marketing actions influence each source of value.

Table 1.2

Comparison of Value of Customers to the Firm with Value to Customers

	LOW Value to Customers	HIGH Value to Customers
HIGH Value of Customers	Vulnerable Customers	Star Customers
LOW Value of Customers	Lost Causes	Free Riders

Source: Gupta and Lehmann (2005), p. 44.

Customer Acquisition

Customer acquisition is a first step in building a customer base. Targeting, acquiring, and keeping the "right" customers entails a consideration of fit with current firm offering, future profitability, and contribution to the overall business risk. Many firms do not employ appropriate criteria to identify profitable customers and their marketing programs are broadly communicated to potential customers who may or may not be profitable. Consequently, customer acquisition can be a costly and risky process—especially because new customers may not represent a good fit for the organization's value proposition, a phenomenon that can often occur if acquisition is done outside previously targeted segments. Customer–product fit becomes important because campaigns aimed toward new customers—that change the positioning of a product—can alienate existing customers. Mittal and Kamakura (2001) discuss the nature of the relationship (or fit) of the customer and the brand, finding that customers with different characteristics have different satisfaction thresholds, and, therefore, different probabilities of repurchase.[3] This leads to the more general observation that customer acquisition influences the diversity of the customer portfolio—thereby influencing business risk—but this aspect of CRM is rarely studied in marketing (Johnson and Selnes, 2005).

Lack of focus during acquisition activities is very likely to result in adverse selection—whereby the prospects that are least likely to be profitable are mostly likely to respond to marketing efforts. For credit companies, the problem is particularly worrisome because they must verify the suitability of all respondents, thus incurring screening costs. Cao and Gruca (2005) address the problem of adverse selection by using data from a firm's CRM system to target prospects likely to respond *and* be approved. This approach increases the number of customers who are approved while reducing the number of "bad" customers. Their analysis is post facto and the marketing message is not altered, but their results show 30 percent to 75 percent improvements compared to traditional models that take into account either response likelihood or approval likelihood but not both. This method can be extended to new customer acquisition and better targeting of costly promotions to migrate customers to higher levels of lifetime value.

Customer Retention

Even though the optimal mix of marketing programs is unique to each business model, customer retention is often easier and cheaper than customer acquisition, especially in stable markets with low growth rates. An organizational emphasis on customer retention also makes sense when discount rates are low (Gupta and Lehmann, 2005). Hence, customer retention has received considerable attention from marketers. In fact, many organizations have considered the management of CLV as equivalent to the management of customer retention, and have ignored the

contribution of other sources of CLV.[4] Research confirms that consumers with higher satisfaction levels and better price perceptions have longer relationships with firms (e.g., Bolton, 1998). In a B2B context, suppliers who have long-term relationships with customers are able to achieve significant sales growth and higher profitability through differential reductions in discretionary expenses (Kalwani and Narayandas, 1995). However, customer retention and defection are complex processes (Åkerlund, 2005).

Relationship Expansion

Organizations can increase CLV and gross margin per customer by stimulating increased product usage or cross-buying (cf., Hogan et al., 2002). However, marketing programs designed to expand relationships with customers have received much less attention than programs for retaining customers. Customer loyalty and cross-buying may be simultaneously determined in some contexts. However, in a direct mail context, Thomas and Reinartz (2003) have shown that cross-buying is a consequence, and not an antecedent, of loyalty behaviors. Nevertheless, the effectiveness of a firm's customer retention and cross-selling efforts will certainly be jointly influenced by the organization's capabilities and systems. A few studies have investigated how service organizations can expand their relationships with customers by increasing usage or cross-buying of additional services (e.g., Bolton and Lemon, 1999; Kamakura et al., 2002; Kamakura, Ramaswami, and Srivastava, 1991; Verhoef, Franses, and Hoekstra, 2001; von Wangenheim, 2004). They typically show that experiences with currently owned products (goods or services) are an important predictor of cross-buying.

Customer Divestment

Although organizations may have customers who are unprofitable to serve ("free riders"), firing customers or refusing to serve them is seldom necessary. Instead, organizations can offer a less attractive value proposition to some segments (e.g., by raising prices or offering lower product quality). In addition, marketing campaigns can be designed to attract profitable customers and be unappealing to less desirable customers. Another option is to find a way to make the latter group profitable by changing the firm's business model. For example, IBM wanted to focus on Fortune 1000 companies, but could not ignore less profitable relationships with small business. Hence, they developed a dealer network that could serve the medium and small businesses in a profitable way.

Challenges

Many firms use the predicted value of the customer asset (also known as customer lifetime value or CLV) to allocate resources to customer or customer segments, thus accurate calculations are important. CLV predictions should be based on forecasts of revenue sources and costs to serve—based on a particular set of marketing actions and an environmental scenario—where multiple forecasts are possible. Dynamic models to forecast the sources of CLV are required for four reasons. First, CLV is often considered a fixed value, when it is actually influenced by and influences marketing strategy (Berger et al., 2002). For example, certain service attributes or marketing variables—such as price or quality—may become more (or less) important to customers as the duration of the relationship lengthens (Boulding et al.,1993; Mittal, Katrichis, and Kumar, 2001; Mittal, Kumar, and Tsiros, 1999). Consequently, dynamic models are required to reflect the evolution of customer

preferences and behaviors over time—so that the path-dependent nature of organizational decisions is explicitly recognized (Bolton, forthcoming; Rust and Chung, forthcoming).

There are established streams of research that model customer acquisition and retention, but there are fewer dynamic models that describe how relationships are expanded by stimulating usage, cross-buying, and word-of-mouth (WOM)—and how these sources affect CLV. Furthermore, customer behaviors are not (typically) considered to be jointly determined within a system of equations. For example, Hogan, Lemon, and Libai (2003, 2004) assess the impact of customer loss due to WOM on product adoption and examine the underestimated effectiveness of advertising due to failure to account for WOM. Subsequently, von Wangenheim and Bayón (forthcoming) propose a model for including the effect of customer referrals on CLV calculations. We believe that much more work is required to build comprehensive, dynamic models of the multiple sources of CLV to produce accurate estimates of CLV, especially in light of the influence of socialization and networks on future behavior (see Hakanson and Snehota, 1995).

Second, forecasts of sources of CLV will depend on competitors' activities—and these activities will change over time. Current CRM models devote little attention to competitors and their influence on a customer's relationship with the target firm (for a notable exception, see Rust, Lemon, and Zeithaml, 2004). Failure to account for competitive effects in a dynamic manner will impair the accuracy of estimating the impact of the marketing actions (Rust et al., 2004).

Third, it is necessary to forecast the implications of marketing actions for the long and intermediate term, as opposed to the short term (Lewis, 2005; Reinartz, Thomas, and Kumar, 2005; Rust and Verhoef, forthcoming). For example, Dekimpe and Hanssens (1995) estimate the long-term effect of marketing activity (specifically, media spending) on sales, using persistence modeling based on time-series observations. The long-term advertising effect is a combination of consumer response, competitive reaction, and firm decision rules effects. The study shows that an advertising medium with lower short-term impact can have a higher long-term effect. Thus, their example demonstrates that traditional approaches can underestimate the long-term effectiveness of marketing expenditures. In subsequent work, they also show that the strategic context is a major determinant of marketing effectiveness and long-term profitability (Dekimpe and Hanssens, 1999).

Fourth, it is interesting to observe that—from a customer portfolio management perspective—the goal of CRM is to invest in customer relationships to maximize value to the customer and (aggregate) value for the firm. Maximizing the duration of a specific customer–firm relationship or the CLV of an individual customer may not be appropriate. This issue arises whenever the firm makes decisions about which customers to acquire, retain, or divest—as well as how to create a portfolio of customers with desirable risk/return characteristics. In other words, decisions about individual customers cannot be made without considering the optimal characteristics of the entire customer portfolio.

Allocating Resources Within and Across Functions, Channels, and Organizational Units

Berger and colleagues (2002, p. 51) recommend that "firms should manage their customers like they manage their assets: by making profitable investments in value-producing areas." Marketers have been especially interested in methods for allocating resources between customer acquisition and retention to maximize return on investment. Unfortunately, many CLV calculations have been characterized as "undervaluing long term customers and over-evaluating prospects" (Hogan et al., 2002), which can lead to misallocation of resources.

In mature markets, customer retention is cheaper and easier and has more impact than customer

acquisition (Berger and Nasr, 1998; Gupta and Lehmann, 2005; Gupta, Lehmann, and Stuart, 2004; Jain and Singh, 2002; Reinartz, Thomas, and Kumar, 2005), yet overbidding on the future can shift the attention from retention to acquisition. Customer acquisition is vital in a growing market because it assures the future growth of the company; yet, in a mature market, retaining customers most often offers the best return on investment.

The problem of finding the equilibrium between investing in acquisition versus in retention is exacerbated by the fact that even though customer acquisition and retention are not independent processes, data limitations have frequently led marketers to treat them as such.[5] Thomas (2001) finds that naive predictions can lead to overinvestment in certain customers (e.g., due to incorrectly estimating the impact of add-on selling). The adoption of a long-term perspective implies maximization of neither acquisition rate nor relationship duration, but maximization of the profitability of the relationship over time (Reinartz, Thomas, and Kumar, 2005).

Strategic models have emerged to help firms allocate resources across diverse organizational actions that influence customer equity. For example, Rust and colleagues (2004) develop a comprehensive strategic model that links strategic investments (e.g., in quality, advertising, loyalty programs, corporate citizenship) to customer equity defined as the sum of current and future customer lifetime values. They account for competition (via switching probabilities) and customer heterogeneity. Their comprehensive model represents an important step toward understanding the complex effect of strategic changes. However, most research has focused (more narrowly) on resource allocation within specific functional areas, including employee selection and training, service quality, customer management effort, multiple channels, customization at the customer, cohort or segment level, loyalty or rewards programs, and the management of customer contacts and processes. We briefly summarize these literature streams below.

Employee Selection and Training

The "service–profit chain" links service operations, employee assessments, and customer assessments to firm profitability (Heskett et al., 1994). For example, Schlesinger and Heskett (1991) describe a "cycle of failure" that occurs when firms minimize employee selection effort and training, so that employees are unable to respond to customers' requests, and (consequently) customers become dissatisfied and do not return—yielding low profit margins. A significant stream of research has focused on a single link in the chain: the relationship between employees and customers. For example, Reichheld (1993) recommends that "to build a profitable base of faithful customers, try loyal employees." Subsequently, there have been numerous studies of the relationships among employee performance, satisfaction, organizational citizenship behaviors, service climate, and customer satisfaction (de Jong, Ruyter, and Lemmink, 2004; Donovan, Brown, and Mowen, 2004; Gruen, Summers, and Acito, 2000; Netemeyer et al., 1997; Netemeyer, Maxham, and Pullig, 2005).

The service–profit chain also provides an integrative framework to guide firms' investments in operations, employee selection and training, and customer management. Researchers have modeled components of the service–profit chain in different industry contexts, such as banking (Loveman, 1998; Roth and Jackson, 1995) and retailing (Rucci, Kim, and Quinn, 1998). Notably, Kamakura and colleagues (2002) develop a comprehensive approach to the service–profit chain, incorporating a strategic model estimated with structural equation modeling and an operational analysis based on data envelopment analysis. They were able to identify ways for bank branches to achieve superior profitability. Interestingly, they discovered that bank branches must be operationally efficient (in terms of deploying employees and technology) and must achieve high customer retention to be maximally profitable.

Service Quality

The marketing literature has linked service quality to profitability in six ways: as a mediator of key service attributes (e.g., responsiveness), through direct effects of service quality on profitability, offensive effects, defensive effects, links between perceived service quality and purchase intentions, and via customer and segment profitability. Zeithaml (1999) provides an excellent summary of this vast literature, so we do not review it in this chapter. In an early paper, Rust, Zahorik, and Keiningham (1995) provide a framework for evaluating service quality improvements. They illustrate its application and show how it is possible to spend too much (or too little) on quality. Subsequently, Rust, Moorman, and Dickson (2002) consider how financial returns from quality improvements arise from revenue expansion, cost reduction, or both. On the basis of their empirical work, they conclude that firms that adopt primarily a revenue expansion emphasis perform better than firms that adopt a cost reduction emphasis or a combination strategy.

Customer Management Effort

Bowman and Narayandas (2004) investigate how increasing product quality and the effort dedicated to customer management influence customer satisfaction and profits. They find that customer delight "pays off," but there are diminishing returns on customer management efforts. Moreover, the presence of a viable competitor provides a benchmark for comparison, as well as resulting in lower margins and lower share of wallet. A competitor's customer management effort negatively influences customer perceptions of employee performance and responsiveness. However, the focal firm's customer management effort is twice as important (in terms of the magnitude of the effect) as competitors' actions. The size of the customer matters in three ways: margins increase with customer size (nonlinear relationship with decreasing returns); the responsiveness of share of wallet variables to satisfaction decreases with customer size; and larger customers are more demanding, and thus have a lower baseline for both satisfaction and performance assessment.

Multiple Channels

The advent of e-commerce has resulted in a proliferation of businesses that use multiple channels to reach their customers. If there is no "overlap" in customers across channels, each channel can be treated as a separate business entity for revenue generation purposes. However, if customers interact with the firm via multiple channels (e.g., browsing online but purchasing in the store) the firm can improve customer profitability by leveraging organizational information processes with CRM systems. Friedman (2002) points out that often the most efficient way to generate leads may be through direct mailing, Internet, or telechannels, while negotiation and sale closure is best done through direct sales channels, while customer support can be done through telephone or Internet. Only by sharing information across channels in real time can firms optimize the results of multichannel customer contact. Thomas and Sullivan (2005) show how multichannel retailers can use enterprise-level data to understand and predict their customers' channel choices over time. They use the information to develop strategies for targeting and communicating with customers in a multichannel environment. Their results indicate that the firm benefits from efficiency in marketing expenditures (i.e., increasing the value of each customer), thereby increasing customer profitability.

Interestingly, firms with extensive experience in one channel and limited experience in other channels are handicapped when they attempt to create value for customers. For example, Srinivasan

and Moorman (2005) show that retailers who are best at using CRM to create customer satisfaction have medium levels of experience in either channel. An explanation for the curvilinear (inverted-U-shape) relationship between length of experience and success of CRM implementations may be that medium levels of experience make firms more committed to the implementation of CRM because it is perceived as a tool to leverage organizational learning. Apparently, companies with low levels of experience cannot use CRM systems to overcome their lack of experience—and lack of involvement by users may exacerbate the situation. This study is a good example of how CRM principles indicate that firms' strategic choices should be contingency-based.

Customization at the Customer, Cohort, or Segment Level

Managerial decisions about investments in human resources, service quality, customer management, and channels are typically made at the organizational level. However, managers must also decide how to allocate resources across individual customers or market segments and organizational units (e.g., geographic regions or bank branches). At the customer level, customized activities can be based on classification variables (such as demographics, or previous purchases), but also on customer response to company-initiated campaigns, such as sales force effort or direct mailing (Rust and Verhoef, forthcoming). Customization at the market segment level can be equally effective (Libai, Narayandas, and Humby, 2002). For organizations with customers who have both unique and common requirements, implementation can be on a case-by-case basis, some customers treated uniquely, some grouped within segments, to optimize the efficiency of the system (e.g., Bolton and Myers, 2003). As the relationships evolve and customers are better understood, service can be further customized.

Loyalty or Rewards Programs

There is ample evidence that a loyalty program can stimulate purchase behavior. For example, when Hilton Hotels introduced a guest loyalty program about a decade ago, it helped the company focus on the most profitable group of customers and reduced the weight of brand positioning—changing the nature of competition in the hospitality industry (Bell et al., 2002). Bolton, Kannan, and Bramlett (2000) discovered that loyalty programs can positively reinforce purchase behavior via a virtuous cycle: more experience with the product stimulates more usage, and more usage leads to more experience. They observed that loyalty programs had complex effects on customer behavior. Members of the loyalty programs were more forgiving of billing errors and exhibited more stable behavior over time (because they were less affected by perceived losses or gains from previous transactions). The authors concluded that loyalty reward programs have the potential to "operate as a form of mass customization that strengthens customers' perception of the company's value proposition" (p. 106). Moreover, Kivetz and Simonson (2003) found that a key factor affecting consumers' response to loyalty programs is their perceived relative advantage or "idiosyncratic fit" with consumer conditions and preferences. When consumers believe they have an effort advantage over others, higher program requirements magnify this perception and can increase the overall perceived value of the program.

The "dark side" of loyalty programs is that some programs fail to contribute to the creation of customer assets or build brand loyalty. They primarily discount prices, thereby eroding future profits (Shugan, 2005). Furthermore, customers who respond primarily to value propositions, even though satisfied, may actually provide little value for the company (Gummesson, 2002). Verhoef's (2003) research suggests that relationship marketing efforts (i.e., direct mailings and

customer loyalty reward programs) increase customer retention and share of wallet when they influence customers' affective commitment, rather than their calculative commitment (which has an economic basis).

Managing Customer Contacts and Processes

Customer-firm contacts are sometimes called "touch points," "critical incidents," or "moments of truth" (Bitner, Booms, and Mohr, 1994). Information about customer contacts resides throughout the organization in fragments that are seldom linked, lacking the understanding of the entire process from the customer's perspective. These fragments are typically stored in information "silos" according to the nature of the activity: transaction histories, sales call records, service operations data, complaints or service requests, marketing communications (e.g., clickstream data, direct marketing activities), community building activities (e.g., Saturn picnics), consumer responses to loyalty programs, and so forth (Bhattacharya and Bolton, 2000; Winer, 2001).

The effects of customer–firm contacts on customer perceptions and behavior are complex; they depend on the number and nature of the contacts, the sequence and timing of the contacts, the channel, whether the contacts are customer- or firm-initiated, and whether short- or long-run effects are assessed. For example, Bolton and Drew (1991) develop a dynamic model of attitude change that shows that the effect of disconfirmation is larger and the effect of prior attitudes on customer attitude is smaller immediately after the service change than in a subsequent period. The effect of customer–firm contacts on profitability may be nonlinear or exhibit threshold effects. For example, Venkatesan and Kumar (2004) found inverted-U relationships between customer profitability and the number of products returned, number of customer contacts, and average time between two customer contacts.

The relationship context moderates the effect of customer–firm contacts. Reinartz and Kumar (2000) show that—contrary to popular opinion—the most profitable customers of a catalog company do not have a long tenure with the company; customer profitability does not increase over time, the cost to serve customers does not decrease over time, and that long-life customers do not pay higher prices. However, in contractual settings, long-term relationships are most profitable, and it makes sense to focus on customer satisfaction and retention (Bolton, 1998). The important effect of prior experiences is especially evident when the firm considers how to "win back" lost customers. Thomas, Blattberg, and Fox (2004) point out that the nature and influence of the prior relationship have an effect on customer reacquisition and any subsequent relationship—so this feature should be taken into account when deciding which lapsed customers to target and how to design the firm's offering. For example, they find that lapsed customers who are more likely to be reacquired have a shorter second tenure with the firm after they have been reacquired.

Even in ongoing relationships, prior experiences have significant downstream effects. Two examples will suffice. Research has shown that extreme incidents—extremely satisfying or dissatisfying events—can affect purchase behavior and associated revenues two years later (Bolton, Lemon, and Bramlett, 2006). Second, theoretical and empirical research shows that brands are social entities, created as much by consumers as by marketers, implying that brand communities are sources of value for customers and influence behavior (Algesheimer, Dholakia, and Herrmann, 2005; Muniz and O'Guinn, 2001).

Challenges

As discussed earlier, researchers have relied on simplifying assumptions to make it possible to calculate CLV and to identify "optimal" solutions. Indeed, Gupta and Lehmann (2005) cor-

rectly argue that executives can gain important strategic insights from fairly straightforward analyses. However, our current models are stylized representations of a much more complex reality. Prior research has established that the effects of investments in employee selection and training, service quality, customer management effort, customization of marketing communications, loyalty programs, and the management of customer contacts on customer behavior (and CLV) are frequently characterized by nonlinear effects, as well as interaction effects with other decision variables and relationship context variables. Moreover, simultaneous relationships, in which organizational actions and customer behavior have feedback effects, are frequently observed. In the future, it will be necessary to build more complex statistical models to capture the richness of these underlying processes (e.g., systems of simultaneous equations that accommodate sample selection bias, threshold effects, nonlinearities, etc.). In addition, since naturally occurring data tend to provide insufficient variation to disentangle simultaneous effects, field and laboratory experiments will also be useful—especially when evaluating alternative courses of action.

A better understanding is required of how companies can implement a coherent and synchronized set of activities that cuts across organizational functions (e.g., marketing, operations, and human resources), multiple channels, and an increasingly diverse set of marketing actions (brand equity, communications activities, loyalty programs, service guarantees, etc.). For example, as we discuss later in this chapter, we know very little about how brand equity, product portfolio decisions, or innovation contribute to CLV. A third challenge for many organizations is accounting for competitive action and reaction (Boulding et al., 2005). The incorporation of competitors' actions and reactions into CRM models—plus consumer responses to these actions—has been largely ignored by researchers (due to the unavailability of data), although we know that competitive effects can be important (Shankar and Bolton, 2004). Current approaches either assume that competitive behavior will remain stable or that relatively straightforward forms of competitive reaction (based on game theoretic models) will occur. In the future, it is likely that technological progress will make it possible to collect competitive information in some study contexts, thereby enriching our understanding of marketplace dynamics.

Global Optimization Models

One of the central tenets of recent customer equity models is that the firm's portfolio of customers is a portfolio of *assets* that should be managed accordingly. Not all customers are equal in terms of the investment required to acquire or retain them, or in terms of their long-term profitability (Thomas, Reinartz, and Kumar, 2004). Moreover, investing in customers based on an estimate of their current lifetime value ignores the future potential of these customers under different strategies (Reinartz and Kumar, 2000, 2003). Hence, firms require sophisticated methods for managing customer relationships *as effectively as possible* to achieve desired levels of risk and return. We refer to these methods as "global optimization models," despite the fact that this term implies a degree of precision in resource allocation that is currently unattainable.

In order to be able to successfully manage customers as assets, a suitable system of CRM metrics should be developed and used to guide resource allocation strategies. Gupta and Lehmann (2005, pp. 110–115) recommend that the organization develop metrics for each element of a "profitability tree" (based on sources of CLV). Alternative strategies can be analyzed by tracing their effects through the tree. Firms will require two sets of metrics to provide diagnostic information: customer-focused metrics, to assess value to the customer, and company-focused metrics, to assess the value of the customer (p. 132).

Segmentation

Traditional market segmentation variables include geography, channel, customer cohort, demographics or "firmographics" (e.g., industry type, growth rate, customer size), and so forth. However, to determine the desirability of customers, Thomas, Reinartz, and Kumar (2004) propose segmentation based on ease of acquiring and retaining customers, observing that there is a negative correlation between acquisition and retention costs and profitability. Boulding and colleagues (2005, p. 158) remark on the unexpected relevance of traditional market segmentation to CRM activities as follows:

> Some may equate CRM with the idea that every firm offer/activity should be customized for individual consumers. However, in all [four] of the application papers [in the *Journal of Marketing* Special Section on CRM], we saw the use of basic market segmentation . . . and three of the papers identify just two segments. Admittedly, these segments were not based on standard demographics, but instead on detailed analyses of prior observed behavior.

This observation is at odds with popular enthusiasm for one-to-one marketing and e-customization—which have been successful in some contexts (e.g., Ansari and Mela, 2003; Peppers and Rogers, 2005). One explanation may be that customized approaches are required in dynamic environments where choices are complex and customers have heightened expectations. Consequently, marketers face two basic questions: (1) Which segmentation variables are most effective for the implementation of CRM procedures and under what conditions? (2) To what extent should organizational actions be standardized or customized—that is, what is the appropriate level of aggregation of customers for organizational action?

Challenges

Economic content, resource content, and social content have to concur for a customer to engage in a relationship characterized by commitment and trust (Morgan, 2000; Morgan and Hunt, 1994). Customers' level of engagement with the firm arises from how their needs fit with the characteristics of the product, as well as from the supplier's actions. Customers will expand their relationship with a firm if new needs arise that require a "problem solving" approach to decision making, whereas they are likely to maintain a less intimate relationship when needs can be met by a routine purchase. Therefore, customers are likely to expand (or withdraw from) a relationship when their needs change. For this reason, research is required to develop a deeper understanding of relationship dynamics and trigger points to select the forward-looking segmentation variables that are leading indicators of future customer profitability (Gustafsson, Johnson, and Roos, 2005). There is a need to return to basic principles of market segmentation (Elrod and Winer, 1982), which call for the creation of market segments by aggregating customers who have the same response function coefficients (obtained from behavioral models). This need is particularly critical in global environments, where the trade-off between customization and standardization is an especially "high stakes" decision (e.g., Bolton and Myers, 2003).

Matching the Customer Portfolio and the Product Portfolio

The Customer Portfolio

The customer portfolio should include customers who have close relationships with the firm *and* customers who have weaker relationships. Although this recommendation may seem counterintui-

tive, the underlying rationale is that firms require a future-oriented perspective that recognizes that they can strengthen weaker relationships with customers over time, yielding greater future cash flows, and that different levels of relationships might require different levels of service. Johnson and Selnes (2004) illustrate this important insight by developing a stylized model and using it to simulate the outcomes of customer portfolio decisions. Their simulations assess the impact of organizational decisions on business outcomes, such as profits and shareholder value, based on a foundation embedded in relational processes and connections among variables.

They postulate that customers can be classified into four groups: strangers, acquaintances, friends, and partners. Strangers—potential customers—have no current relationships with the firm. Acquaintances are customers who have low involvement with the firm, can easily switch suppliers, and are retained based merely on their satisfaction with current offerings. Friends base the relationship with the firm on satisfaction and trust. Partners represent the most committed segment, and the offering for them is customized, dedicated resources being devoted to the individual customer. As the level of commitment increases, the value of the offering becomes more customized and thus more difficult to compare to other firms' offers.

Managers are accustomed to thinking in terms of a dichotomy: offensive marketing, which emphasizes customer acquisition, versus defensive marketing, which emphasizes customer retention (Fornell and Wernerfelt, 1987). Johnson and Selnes (2004, 2005) demonstrate that CRM strategies are more nuanced, arguing that "the individual relationships are the building blocks for understanding the value created across an entire customer portfolio" (2004, p. 3). Firms must identify ways to connect with their customers and create value by adapting their offer to the customer's specific needs. Assuming that all customers have the same needs, even in terms of relationship intensity, is a naive oversimplification (Gadde and Snehota, 2000). The process of dual value creation and relationship development takes time and effort, and requires a substantial commitment to ensure that future cash flow increases from the target market. Johnson and Selnes (2004, 2005) recommend (1) balancing closer customer relationships with weaker ones and (2) balancing customers who have stable purchasing patterns with customers who have more volatile patterns. For example, a broader customer base that includes customers who have weaker relationships with the firm (e.g., friends and acquaintances) provides opportunities for economies of scale, insulation from cost shocks, and more opportunities to build stronger relationships. Their approach extends conventional notions of customer behavior-based market segmentation to explore dynamic considerations of customer portfolio management.

The Product Portfolio

The construction of the product portfolio begins with investments in brands over time (Park, Jaworski, and Maclnnis, 1986). Keller (1993) defines customer-based brand equity as the differential effect that knowledge about the brand has on customer response to the marketing of that brand. This framework suggests that brand marketing activities (and investments) should be designed to enhance brand awareness and improve the favorability, strength, or uniqueness of brand associations. Ailawadi, Lehmann, and Neslin (2003) have shown that revenue premium, an outcome-based measure of brand equity, is stable over time and correlates with brand and category characteristics as well as with other measures of brand equity.

In an integrating framework that builds on the work of Keller and Lehmann (2003), Ambler and colleagues (2002) make a compelling argument regarding the synergy between brand equity and customer equity. Recently, customer equity models have incorporated brand equity as a distinct revenue source (cf. Rust, Lemon, and Zeithaml, 2004). Fournier (1998) argues that conceptual-

izing brand equity in terms of brand–consumer relationship provides more insight into the ways that strong bonds or relationships are created, maintained, and deepened over time. Consistent with this notion, Hogan and colleagues (2002, p. 30) point out that "the valuation of brand extension opportunities is fraught with uncertainty" because the value of the brand and its ability to be extended depends on the "quality" (i.e., current and future value) of the customer portfolio. They explicitly recognize the role of influencers with social connections to other potential customers.

A recent study of the relationship between customer satisfaction, cash flow, and shareholder value by Gruca and Rego (2005) shows that the larger the brand portfolio, the less efficient firms are in growing their cash flows. They also find that firms operating in more concentrated industries (i.e., with fewer competitors) are better able to convert satisfaction into reduced cash flow variability. Mizik and Jacobson (2005) find that brand assets (especially measures of a brand's relevance and vitality to consumers) influence stock returns both directly and indirectly via current earnings. These findings suggest that viewing the product portfolio decision through a "relationship lens" is appropriate.

Challenges

At present, there is a clash between customer-centered and product-centered views of the firm. Yet, recent research suggests that simultaneously "matching" the product and customer portfolios is crucial to long-term business performance. A matching approach is much different from current approaches to determining the appropriate depth and breadth of a firm's product portfolio (Bordley, 2003). This issue is especially critical when we consider innovation or new product development or new customer acquisition. For example, Thompson, Hamilton, and Rust (2005) show that products are loaded with many features to stimulate trial (customer acquisition), but this strategy can potentially decrease customer lifetime value. Additional research is required to understand and manage the dynamic process by which customer and product portfolios should be adjusted over time to achieve strategic objectives for the dual creation of value. This topic has important implications for the management of innovation, investments in brand equity, the development of new markets, and the deepening of relationships in existing markets.

Managing Risk and Return

Segmenting the market and then nurturing selected customers—thereby developing trust and commitment to the relationship—is (potentially) a high return strategy. However, a firm's targeted customers are very likely to be vulnerable to the same business cycles and economic factors. Consequently, customer satisfaction and commitment will not insulate the firm from market downturns, even though customers may be less price elastic in their purchasing intentions (Anderson and Sullivan, 1993). In other words, it is insufficient simply to consider future customer profitability. Factors such as the customers' industry, firm size, geography, and contribution to revenue volatility should be considered when making resource allocation decisions.

Financial principles suggest that a diversified customer base can help companies to dampen the volatility of earning streams and ensure the stability of the business (Dhar and Glazer, 2003; Srivastava, Shervani, and Fahey, 1998, 1999). A diversification strategy requires a long-term assessment of "desirable" customers in terms of both risk and return, as opposed to a short-term focus on expected returns. CLV calculations incorporate both risk and return by discounting revenues and costs to estimate net present value. Marketers have typically used a risk-adjusted rate of return—that is, they employ a single discount rate, the weighted average cost of capital. Von Wangenheim and

Lenz (2005) propose calculating customer beta based on volatility of purchase to account for the risk associated with a customer. An alternative approach, called the "certainty equivalent approach," explicitly adjusts cash-flow streams for various risk factors (such as the probability of defection) and then discounts them at the risk free rate (cf. Hogan et al., 2002, p. 31).

Recent research has shown that customer satisfaction is linked to the growth and stability of a firm's future cash flows. Anderson, Fornell, and Mazvancheryl (2004) reported a positive association between a firm's current level of customer satisfaction and contemporaneous financial market measures such as Tobin's Q, stock and market-to-book ratio. Subsequently, Gruca and Rego (2005) reported that satisfaction increases shareholder value by increasing future cash flow and reducing its variability, and their findings were robust when alternative measures of firm value or model specifications were explored. Their study was based on longitudinal data from the American Customer Satisfaction Index and Compustat databases. They were able to show that the relationship between satisfaction and cash flows is moderated by industry (e.g., product purchase cycle) and firm (e.g., magnitude of advertising expenditures) characteristics. Not surprisingly, they find that there are trade-offs between cash-flow growth and cash-flow variability. These findings suggest that marketers should explicitly recognize different risk factors in resource allocation decisions.

Challenges

The development of an "optimal" strategy requires a balancing of risk and return that goes beyond current CRM practices that target the most profitable or easy-to-serve customers. Yet, marketers do not have appropriate procedures to adjust for the differential risk of various customers when making resource allocation decisions. The financial principles are especially challenging because—in these situations—customers with certain characteristics (e.g., industrial buyers in specific industries or consumers in specific geographical areas) may yield more volatile earnings streams. If marketers wish to explicitly recognize risk factors other than defection, their CLV calculations should use a risk-adjusted discount rate rather than a weighted average cost of capital. Hogan and colleagues (2002) say that this task can be accomplished either by measuring the variance of returns over time for various segments and calculating the appropriate discount rate—analogously to the evaluation of real options (Copeland and Antikarov, 2001)—or by decomposing customer profitability into additional sources. The financial principles of portfolio management are well established, but marketers know very little about how CRM principles should be applied to customer and product portfolios.

Conclusions

Based on our review of the evolving literature on CRM, we have argued that CRM is an integral part of a company's strategy. A company's decisions regarding the development of organizational capabilities, the management of value creation and its sources, and the allocation of resources across investment opportunities are crucial elements in the array of strategic choices of the company. CRM principles provide a strategic and tactical focus for identifying and realizing sources of value for the customer and the firm. This chapter has described how CRM principles can guide five key organizational processes: 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. For each organizational process, we have identified some of the challenges facing marketing scientists and practitioners. These are summarized in our research agenda, which is displayed in Table 1.3.

Table 1.3

Future Research Agenda

Process	Research topics
Strategic choices	• Methods for achieving cross-functional coordination • Development of organizational information processes and learning capabilities • Guidelines regarding the effective application of customer relationship management (CRM) principles in strategic, cross-functional contexts • Metrics for establishing goals and assessing outcomes • Frameworks that link strategic-level metrics to tactical metrics for functional groups, business processes, and business units
Dual creation of value	*Value for the customer* • Extension of theoretical work on how to create value for customers • Models that predict how customers will perceive value in the future • Studies of the antecedents and outcomes of customers' willingness to reveal private information, perceptions of fairness • Research that extends current knowledge of retrospective measures (satisfaction, purchase intentions) to leading indicators and antecedents of future behavior *Value for the firm* • Better forecasts of sources of customer lifetime value (CLV): acquisition, retention, and margin • Decomposition of forecasts of margin into underlying components (product usage, cross-buying, word-of-mouth [WOM]) • Research to link organizational actions to sources of value • Research to reconcile customer-based valuation with market values for firms • Dynamic forecasts that account for changes in customer preferences, organizational actions, and competitor actions, heterogeneity across customers • Methods for allocating "lumpy" costs • Improved methods for incorporating value of WOM into CLV
Managing sources of value for customers	• How to create product–customer fit • How to recruit/divest customers and avoid "adverse selection" problems • Further investigation of antecedents of each source of value: trial, usage, product usage, and (especially) cross-buying and word-of mouth • Development of dynamic models of customer behavior to accommodate shifts in customer preferences (e.g., due to triggers), context effects, changes in competitive behavior, short and long-run outcomes
Allocation of resources within and across functions, channels, and organizational units	• How to maximize future customer profitability in the long run instead of current customer profitability in the short run • Managing dynamics in changing customer relationships, such as fading and growing • More sophisticated models that recognize simultaneity among variables representing marketing actions and customer responses (including WOM) • How to implement a coherent (across functions) and synchronized (over time) set of activities • Use of systematic experimentation so that opportunities are not overlooked
Global optimization models	• Segmentation should go beyond "classic" variables (geography, customer size, past customer behaviors) to reflect underlying customer needs, trigger points, and so on, that signal future behavior • Models of how to create "balanced" customer portfolios with desired levels of future earnings and risk

Table 1.3 *(continued)*

Process	Research topics
	• Conceptual models of customer–brand relationships, and models of when and how to invest in brands to increase CLV • Matching (new and existing) product benefits to (new and existing) customer needs • Matching the product and customer portfolio over time • Developing a diversified customer portfolio • Adjusting for the differential risk of different customer groups

In this concluding section, we identify three features that are likely to characterize future research on the topic of managing customer relationships. These features provide a unifying perspective on how future research is likely to unfold.

Customer Portfolio Management as a Unifying Framework

In his famous article, "Marketing Myopia," Levitt (1960) argues that firms exist to fulfill needs, not to sell products. In other words, customers are the building blocks of firms. The ultimate objective of the firm is to position itself for long-term survival, and the role of marketing is to assist the firm in its endeavor by building strong market assets such as a valuable customer base and strong brands (Anderson, 1982). Hence, the development of a customer base is vital to firm survival and should be one of the main foci of marketing (Hunt and Horn, 1983).

Wayland and Cole (1997, p. 12) claim that most businesses suffer from "a glut of products that blur the company's focus." An illustrative example is the grocery store manager who attempted to increase profitability by eliminating small volume items, thereby alienating customers and opening the gates to competition (Rust, Zeithaml, and Lemon, 2000, pp. 16–22). This example shows that an inadequate strategy for the dual creation of value—especially regarding the synchronization of the customer and product portfolios—can impede long-term growth and profitability. Knowledge of products is not enough. Knowledge of what products mean to customers and their role in building the customer asset is vital. The role of CRM is to assist firms in leveraging "the information and experience in acquisition, development and retention of a profitable customer portfolio," which Wayland and Cole call *customer knowledge management* (1997, p. 32).

For these reasons, customer portfolio management provides a unifying framework for considering any expenditure or investment decision. Customer portfolio management frames questions that arise within and across all five organizational processes. At the strategic level, research is required to guide firms in establishing goals for managing their customer portfolios, as well as assessing business performance outcomes. This issue is closely intertwined with the need for research to reconcile customer-based value creation with market values for firms, build models to predict sources of value for both the customer and the firm, and develop metrics that can be used to manage sources of value. In addition, research is required to guide firms in how to identify and implement cross-functional activities, synchronized over time, to be maximally effective in creating portfolios with desired levels of earnings and risk.

Models of Complex Systems

When the majority of firms have adopted CRM technology and related best practices, firms that use CRM systems to connect with customers across multiple channels will no longer have a competi-

tive advantage in their markets. As Porter (1996) observes, operational systems are not a long-term sustainable source of competitive advantage. Consistent with this notion, research indicates that CRM technology leverages an organization's prior capabilities and information processes to create value for customers and the firm. Day (2003, p. 77) argues that firms must create a superior customer-relating capability by aligning the organization through incentives, metrics, accountabilities, and structures. Consequently, additional research is required to investigate how an organization can create, communicate, and deliver value for customers by integrating and coordinating cross-functional processes to produce coherent, mutually beneficial outcomes.

Firms will require comprehensive, integrative models to guide strategic choices, allocate resources to create value for customers, and manage customer acquisition, retention, cross-buying, word-of-mouth, and divestment in ways that increase value for the firm. They need models of *complex systems* that capture relations among organizational processes as well as connections among strategic and tactical variables. We use the term "complex systems" to refer to systems of equations that describe simultaneous relationships among multiple dependent variables (customer and firm actions) that contribute to CLV, that capture the effects of interactions among organizational functions (e.g., employee selection and training, quality of service operations) and among marketing variables—price, direct marketing promotions, relationship marketing instruments, advertising communications, and distribution channels—and also the effects of competitive actions and heterogeneity across customers.

Based on past experience, purely predictive models are unlikely to provide sufficient insight into the path-dependent nature of the value creation process. Hence, models of complex systems must be based on strong theory about how customer behavior changes over time, recognizing the important role of mediating constructs (e.g., fairness, satisfaction, commitment, trust, brand preference) as precursors of customer behavior. They must also reflect how customers actively participate in the creation of the customer experience (Prahalad and Ramaswamy, 2004). These features have become increasingly important as firms interact with customers in "real time" where communication and interactions are (potentially) two-way and take place across multiple channels. For these reasons, models are likely to be based on increasingly sophisticated theory and methods (e.g., agent-based models).

A Shift in Focus Toward Contingencies or Context Effects

Throughout this chapter, we have noted many instances in which CRM research has discovered contingency-based findings. For example, Gruca and Rego (2005) found that firms operating in more concentrated industries were better able to convert satisfaction into reduced cash flow variability (i.e., reducing the risk associated with the customer portfolio). Kamakura and colleagues (2002) found that bank branches must be operationally efficient (in terms of deploying employees and technology) and must achieve high customer retention if they are to be maximally profitable (i.e., increasing returns from the customer portfolio). Based on these and other findings, there is now compelling evidence that CRM research must move away from studies of marketing decision variables in isolation.

We believe that marketing scientists should make a conscious effort to investigate how context variables—which prior research may have considered "background factors"—moderate the effectiveness of firm decision variables on business performance outcomes (Lynch, 1982). By moving background factors into the foreground, marketers can begin to understand how the effectiveness of marketing activities depends on organizational and market contingencies. There are numerous ways to design research studies to attack broader issues (without modeling complex systems), depending on the nature of the underlying problem.

First, laboratory experiments can be designed to study organizational variables that tend to covary in field settings. For example, prior research indicates that: (1) activities that enhance brand awareness and/or improve the favorability, strength, or uniqueness of brand associations, create "brand equity" and yield a revenue premium (Ailawadi, Lehmann, and Neslin, 2003); (2) brands are social entities, created by communities of consumers, as well as by marketers (Muniz and O'Guinn, 2001); (3) the success of brand extensions depends on the quality of the current and future customer portfolio (Hogan et al., 2002). In an experiment, the cognitive, social, and relational effects associated with a brand can be manipulated to help assess their relative size, as well as the existence of interaction effects, and the net effect on the value of the customer to the firm. Experiments are also a useful way to study threshold effects, nonlinear effects, and so forth.

Second, field experiments are useful for studying how organizations allocate resources in situations that are characterized by endogenous or "feedback effects." These situations are especially prevalent in CRM settings. For example, a firm may use CLV estimates to target certain market segments with a loyalty program, but the existence of the loyalty program has altered customers' purchase behavior and consequently influences the firm's estimate of CLV. Companies should engage in systematic experimentation to disentangle these effects. Small-scale "pilot studies" provide opportunities to conduct simple field experiments that vary organizational actions across customers, organizational units, and so forth. A compelling argument in favor of pilot studies is that—without systematic experimentation—opportunities for revenue expansion are likely to be overlooked.

A variety of quasi-experimental designs are useful when collecting cross-sectional or longitudinal data. Furthermore, when sufficient academic research has accumulated, meta-analyses can play an important role in identifying moderating variables.

In Closing

Research on managing customer relationships has the potential to provide a unifying framework for studying diverse marketing issues, and to contribute more broadly to business practice. It also identifies fruitful new areas for theoretical and methodological advances in addressing organizational challenges at the cultural, strategic, and tactical levels. We know very little about how brand equity, product portfolio decisions, or innovation contribute to customer equity, and we do not understand the relationship dynamics that unfold to create customer value. Research on these topics will generate new intellectual insights for marketing scientists and managers.

Notes

1. There is a long tradition of reach frequency monetary value models that use the number and timing of previous transactions to identify customers who should be targeted with advertising and promotion (Venkatesan and Kumar, 2004). Interestingly, customer–firm contacts or touch history is not considered in models for predicting whether a customer is "dead" or "alive"—probably because firms do not routinely record the occurrence of customer–firm service encounters.

2. See the work of the Industrial Marketing and Purchasing Group (IMP) (e.g., Ford, 1990).

3. See: Abell and Hammond (1979).

4. A few database marketers have incorporated additional sources of value into their calculation of CLV (e.g., Hughes, 1996; Wayland and Cole, 1997).

5. Thomas (2001) shows that a Tobit model with selection is better than a standard Tobit model for linking customer acquisition to retention. The primary reason is that the Tobit model with selection addresses both censoring and data truncation problems. The length of the customer's lifetime is observed conditional on the customer being acquired and—since the direct costs of acquisition are higher than the direct costs

of retention—standard Tobit model predictions can lead to overinvestment in certain customers (e.g., due to incorrectly estimating the impact of add-on selling). Generally, selection bias may require sophisticated analytical techniques to correct for censoring and truncation (Heckman 1979).

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Chapter 2

A CRITICAL REVIEW OF MARKETING RESEARCH ON DIFFUSION OF NEW PRODUCTS

Deepa Chandrasekaran and Gerard J. Tellis

Abstract

We critically examine alternate models of the diffusion of new products and the turning points of the diffusion curve. On each of these topics, we focus on the drivers, specifications, and estimation methods researched in the literature. We discover important generalizations about the shape, parameters, and turning points of the diffusion curve and the characteristics of diffusion across early stages of the product life cycle. We point out directions for future research.

Because new products affect every aspect of the life of individuals, communities, countries, and economies, the study of the diffusion of innovations is of vital importance. Researchers have studied this topic in various disciplines, including marketing, economics, medicine, agriculture, sociology, anthropology, geography, and technology management. We present a critical review of research on the diffusion of new products primarily in the marketing literature, but also in the economics and geography literature. We use the word *product* broadly to cover any good, service, idea, or person. We distinguish the term *new product* from the broader term *innovation*, which refers to both new product and new method, practice, institution, or social entity. Even though we restrict our review to the marketing literature, which focuses on the diffusion of new products, the implications of our review may hold as well for the study of the diffusion of innovations in other disciplines. The marketing literature on this topic is vast, dating back at least as early as the publication by Fourt and Woodlock (1960).

The term *diffusion* has been used differently in two groups of literatures. Within economics and most nonmarketing disciplines, diffusion is defined as *the spread of an innovation across social groups over time* (Brown, 1981; Stoneman, 2002). As such, the phenomenon is separate from the drivers, which can be consumer income, the product's price, word-of-mouth communication, and so on. In marketing and communication, diffusion typically has come to mean *the communication of an innovation through the population* (Golder and Tellis, 1998; Mahajan, Muller, and Bass, 1990; Mahajan, Muller, and Wind, 2000a; Rogers, 1995). In this sense, the phenomenon (spread of a product) is synonymous with its underlying driver (communication). The Webster (2004) definition of the noun "diffusion" is "the spread of a cultural or technological practice or innovation from one region or people to another, as by trade or conquest" and the verb "diffusing" is "pour, spread out or disperse in every direction; spread or scatter widely." This latter interpretation is synonymous with the term's use in economics and most other disciplines. In addition, some researchers in marketing have subscribed to the definition used in economics (Bemmaor, 1994; Dekimpe, Parker, and Sarvary, 2000a; Van den Bulte and

Stremersch, 2004). Hence, in this review, we define diffusion as *the spread of an innovation across markets over time.*

Researchers commonly measure diffusion using the sales and especially the market penetration of a new product during the early stages of its life cycle. To characterize this phenomenon carefully, we adopt the definitions of the stages and turning points of the product's life cycle by Golder and Tellis (2004):

1. *Commercialization* is the date a new product is first sold.
2. *Takeoff* is the first dramatic and sustained increase in a new product's sales.
3. *Introduction* is the period from a new product's commercialization until its takeoff.
4. *Slowdown* is the beginning of a period of level, slowly increasing, or temporarily decreasing product sales after takeoff.
5. *Growth* is the period from a new product's takeoff until its slowdown.
6. *Maturity* is the period from a product's slowdown until sales begin a steady decline.

Hence, there are two key turning points in the diffusion curve: takeoff and slowdown.

Prior reviews address various aspects of the marketing literature on the diffusion of new products. For example, Mahajan, Muller, and Bass (1990) provide an excellent overview of the Bass model, its extensions, and some directions for further research. Parker (1994) provides an overview of the Bass model and evaluates the various estimation techniques, forecasting abilities, and specification improvements of the model. Mahajan, Muller, and Bass (1995) summarize the generalizations from applications of the Bass model. An edited volume by Mahajan, Muller, and Wind (2000b) covers in depth various topics in diffusion models, such as specification, estimation, and applications. Sultan, Farley, and Lehmann (1990) and Van den Bulte and Stremersch (2004) meta-analyze the diffusion parameters of the Bass model.

The current review differs from prior reviews in two important aspects. First, the prior reviews focus on the S-curve of cumulative sales of a new product, mostly covering growth. This review focuses on phenomena besides the S-curve, such as takeoff and slowdown. Second, the above reviews focus mainly on the Bass model. This review considers the Bass model as well as other models of diffusion and drivers of new product diffusion other than communication.

Our key findings and the most useful part of our study is the discovery of potential generalizations from past research. For the benefit of readers who are familiar with this topic, we present these generalizations before details of the measures, models, and methods used in past research. (Readers who are unfamiliar with the topic may want to read the Potential Generalizations section last). Therefore, we organize the rest of the chapter as follows. In the next section, we summarize potential generalizations from prior research. In the third section, we point out limitations of past research and directions for future research. In the fourth section, we evaluate key models and drivers of the diffusion curve. In the fifth section, we evaluate models of the key turning points in diffusion: takeoff and slowdown.

Potential Generalizations

We use the term *potential generalizations* or regularities to describe empirical findings with substantial support. By substantial, we mean that support comes from reviews or meta-analyses of the literature or individual studies with a large sample of over ten categories or ten countries. Table 2.1 lists the studies on which the potential generalizations are based. This section covers important findings about the shape of the diffusion curve, parameters of the Bass models, the turning points of diffusion, and findings across stages of the diffusion curve.

Table 2.1

Studies Included for Assessing Potential Generalizations

Authors	Categories	Countries
Gatignon, Eliashberg, and Robertson (1989)	6 consumer durables	14 European countries
Mahajan, Muller, and Bass (1990)	Numerous studies	
Sultan, Farley, and Lehmann (1990)	213 applications	United States, European countries
Helsen, Jedidi, and DeSarbo (1993)	3 consumer durables	11 European countries and United States
Ganesh and Kumar (1996)	1 industrial product	10 European countries, United States, and Japan
Ganesh, Kumar, Subramaniam (1997)	4 consumer durables	16 European countries
Golder and Tellis (1997)	31 consumer durables	United States
Putsis et al. (1997)	4 consumer durables	10 European countries
Dekimpe, Parker, and Sarvary (1998)	1 service	74 countries
Kumar, Ganesh, and Echambadi (1998)	5 consumer durables	14 European countries
Golder and Tellis (1998)	10 consumer durables	United States
Kohli, Lehmann, and Pae (1999)	32 appliances, house wares and electronics	United States
Dekimpe, Parker, and Sarvary (2000a)	1 innovation	More than 160 countries
Mahajan, Muller, and Wind (2000a)	Numerous studies	
Van den Bulte (2000)	31 consumer durables	United States
Talukdar, Sudhir, and Ainslie (2002)	6 consumer durables	31 countries
Agarwal and Bayus (2002)	30 innovations	United States
Goldenberg, Libai, and Muller (2002)	32 innovations	United States
Tellis, Stremersch, and Yin (2003)	10 consumer durables	16 European countries
Golder and Tellis (2004)	30 consumer durables	United States
Stremersch and Tellis (2004)	10 consumer durables	16 European countries
Van den Bulte and Stremersch (2004)	293 applications	28 countries

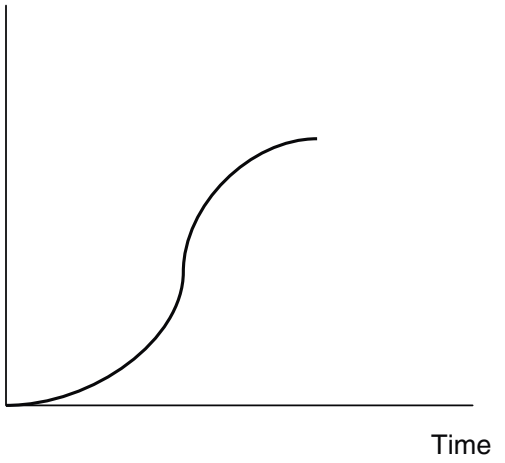
Shape of the Diffusion Curve

The most important and most widely reported finding about new product diffusion relates to the shape of the diffusion curve (see Figure 2.1). Numerous studies in a variety of disciplines suggest that (with the exception of entertainment products) the plot of cumulative sales of new products against time is an S-shaped curve (e.g., Mahajan, Muller, and Bass, 1990; Mahajan, Muller, and Wind, 2000a).

Parameters of the Bass Model

Most of the marketing studies use the Bass diffusion model to capture the S-shaped curve of new products sales (see later section for explanation). This model has three key parameters: the coefficient of innovation or external influence (p), the coefficient of imitation or internal influence (q), and the market potential (α or m).

Figure 2.1 **Cumulative Adoptions over Time**



Coefficient of Innovation

- The mean value of the coefficient of innovation for a new product lies between 0.0007 and 0.03 (Sultan, Farley, and Lehmann, 1990; Talukdar, Sudhir, and Ainslie, 2002; Van den Bulte and Stremersch, 2004).
- The mean value of the coefficient of innovation for a new product is 0.001 for developed countries and 0.0003 for developing countries (Talukdar, Sudhir, and Ainslie, 2002).
- The coefficient of innovation is higher for European countries than for the United States (Sultan, Farley, and Lehmann, 1990).

Coefficient of Imitation

- The mean value of the coefficient of imitation for a new product lies between 0.38 and 0.53 (Sultan, Farley, and Lehmann, 1990; Talukdar, Sudhir, and Ainslie, 2002; Van den Bulte and Stremersch, 2004).
- Industrial/medical innovations have a higher coefficient of imitation than consumer durables and other innovations (Sultan, Farley, and Lehmann, 1990).
- The mean value of the coefficient of imitation for a new product is 0.51 for developed countries and 0.56 for developing countries (Talukdar, Sudhir, and Ainslie, 2002).

Market Potential

The average market penetration potential ceiling of a new product is 0.52 for developed countries and 0.17 for developing countries (Talukdar, Sudhir and Ainslie, 2002).

Time to Peak Sales

It takes about nineteen years on average for a new product to reach peak sales in developing countries, compared to an average of sixteen years for developed countries (Talukdar, Sudhir, and Ainslie, 2002).

Biases in Parameter Estimation

The nonlinear estimation of static models such as the Bass model leads to downward biases in parameter values of market potential and the coefficient of innovation and an upward bias in the coefficient of imitation (Van den Bulte and Lilien, 1997). The market potential can be underestimated by 20 percent, the coefficient of innovation can be underestimated by 20 percent, and the coefficient of imitation can be overestimated by 30 percent (Van den Bulte and Lilien, 1997). Using longer time series and using data with higher frequency are associated with lower estimated q / p values (Van den Bulte and Stremersch, 2004).

Drivers

- There is mostly indirect and some direct support for drivers of diffusion. Key drivers in order of support are word-of-mouth communication, economics, marketing mix variables such as prices, consumer heterogeneity, and consumer learning (Dekimpe, Parker and Sarvary, 1998, 2000a; Ganesh, Kumar, Subramaniam, 1997; Gatignon, Eliashberg, and Robertson, 1989; Mahajan, Muller, and Bass, 1990; Kumar, Ganesh and Echambadi, 1998; Mahajan, Muller, and Wind, 2000a; Putsis et al., 1997; Stremersch and Tellis, 2004; Talukdar, Sudhir, and Ainslie, 2002; Van den Bulte and Stremersch, 2004).
- A 1 percent change in purchasing power parity adjusted per capita income is likely to change the market penetration potential by about 0.3 percent (Talukdar, Sudhir, and Ainslie, 2002).
- A 1 percent change in international trade or urbanization is likely to change the market penetration potential by about 0.5 percent and 0.2 percent respectively (Talukdar, Sudhir, and Ainslie, 2002).

Turning Points of the Diffusion Curve

This section describes findings about the regularities in takeoff and slowdown—the two turning points of the diffusion curve.

Regularities in Takeoff

Patterns of Takeoff

Estimates of the average time to takeoff range from six to ten years (Agarwal and Bayus, 2002; Golder and Tellis, 1997; Kohli, Lehmann, and Pae, 1999). However, the average time to takeoff varies across products, countries, and time (Tellis, Stremersch, and Yin, 2003).

- Brown goods (entertainment and information products) take off faster, with an average of two years, than white goods (kitchen and laundry appliances), with an average of eight years (Tellis, Stremersch, and Yin, 2003).
- The average time to takeoff of new products in Scandinavian countries is four years, in mid-European countries it is six years, and in Mediterranean countries, it is eight years (Tellis, Stremersch, and Yin, 2003).
- The average time to takeoff is eighteen years for categories introduced before World War II (Golder and Tellis, 1997), but only six to ten years for categories introduced after World War II in the United States.

Drivers of Takeoff

- Every 1 percent decrease in price leads to a 4.2 percent increase in the probability of takeoff (Golder and Tellis, 1997).
- Takeoff in the number of firms in the market precedes product takeoff by at least three years (Agarwal and Bayus, 2002).
- The average penetration at takeoff is 1.7 percent (Golder and Tellis, 1997).

Regularities in Slowdown

Patterns of Slowdown

- Sales drop at slowdown in 50–96 percent of categories (Goldenberg, Libai, and Muller, 2002; Golder and Tellis, 2004).
- Sales decline by an average of 15–32 percent during these drops after slowdown (Goldenberg, Libai, and Muller, 2002; Golder and Tellis, 2004)

Drivers of Slowdown

Price declines, market penetration, wealth, and information cascades seem to influence the probability of slowdown (Golder and Tellis, 2004). In particular,

- Every 1 percent increase in price is associated with a 5 percent increase in the probability of slowdown.
- Slowdown occurs on average at 34 percent penetration.
- Every 1 percent increase in penetration is associated with a 3.6 percent increase in the probability of slowdown.
- Every 1 percent decrease in total gross national product (GNP) is associated with a 17 percent increase in the probability of slowdown.
- Products that tend to have large increases during takeoff seem to have large declines at slowdown.

Findings Across Stages

This section compares the key findings on the duration, growth rates, and price declines in the various stages and transition points of the product life cycle.

Duration

- On average, the duration of the introduction stage is six to ten years, of the growth stage is eight to ten years, and of the early maturity stage is five years (Agarwal and Bayus, 2002; Goldenberg, Libai, and Muller, 2002; Golder and Tellis, 2004; Golder and Tellis, 1997; Stremersch and Tellis, 2004; Tellis, Stremersch, and Yin, 2003).
- Timesaving products are associated with longer growth stages than non-timesaving products (Golder and Tellis, 2004).
- Leisure-enhancing products are associated with shorter growth stages than non-leisure-enhancing products (Golder and Tellis, 2004).

- The duration of the introduction and early maturity stages is getting shorter over time, but not the duration of the growth stage (Golder and Tellis, 2004).
- Overall, a new product reaching 5 percent household penetration in 1946 in the United States took about fourteen years to go from 10 percent to 90 percent of its estimated maximum adoption ceiling. In 1980, that time has dropped to about half, at seven years (Van den Bulte, 2000).

Price

Price reductions are larger in recent periods for both the introduction and the growth stages. The price at takeoff is 80 percent of the price at commercialization for pre–World War II products and 63 percent for post–World War II products. The price at slowdown is 56 percent of the price at commercialization for pre–World War II products and 30 percent for post–World War II products (Golder and Tellis, 2004).

Growth Rates

- The mean growth rate is 31 percent during introduction, 428 percent during takeoff, 45 percent during growth, –15 percent during slowdown, –25 percent during early maturity, and 3.7 percent during late maturity (Golder and Tellis, 2004).
- The mean economic growth rate is 1 percent during introduction, 4.3 percent during takeoff, 3.1 percent during growth, 0.86 percent during slowdown, 2.4 percent during early maturity, and 3.1 percent during late maturity of new products (Golder and Tellis, 2004).
- Timesaving products tend to have lower growth rates in the growth stage than non-time-saving products (Golder and Tellis, 2004).
- Leisure-enhancing products tend to have higher growth rates in the growth stage than non-leisure-enhancing products (Golder and Tellis, 2004).
- The average growth rate during the growth stage is 45 percent per year in the United States, 46 percent for the Nordic countries, 41 percent for Mid-European countries, and 36 percent for Mediterranean countries (Golder and Tellis, 2004; Stremersch and Tellis, 2004).

Future Research

Despite decades of research and a large body of potential generalizations in diffusion, many problems remain unaddressed. This situation provides exciting opportunities for future research. We divide these opportunities into four sections: measurement, theories, models, and findings.

Measurement

The literature in this area has mostly ignored the problem of measurement. Yet, measurement plays a critical role in documenting the phenomena under study. Measurement is also an important prerequisite for modeling. For example, no clear rules are available for the measurement of the start of the product life cycle or the year of introduction of a new product. Most researchers consider the date from which data become available as the date for the introduction of the new product. However, syndicated data sources that track sales of new products tend to do so only when a product has become popular and shows promise of becoming a mass-market product. Using the date of availability of sales as a surrogate for the start date may grossly underestimate the duration of the

introductory period and the time for takeoff. In addition, models such as the Bass model, which are highly sensitive to the number of observations, can yield biased estimates and predictions due to erroneous start dates. Researchers can correct for this by using model specifications that give statistically valid estimates of the launch date.

In addition, most researchers use sales as the dependent variable. As such, sales should consist only of first adoptions of the new product. However, in effect, most databases do not discriminate between first purchase and repurchases when describing sales. In addition, the data measured as sales often represent "shipments," which captures supply of products rather than demand.

Further, researchers do not define a clear stopping rule for the period of the study. The period modeled should end when the entire market has made first purchases or at least when adoptions have peaked. Often researchers use the data available until the first peak in sales.

The literature contains several competing measures for takeoff. Measures for slowdown and the saddle or trough in sales are still tentative and have little validation. Although underresearched, measures for some of the key phenomena are very important and play a critical role in the validity and interpretation of the parameters of models. Perhaps this is the most important area for future research.

Theories

Researchers have identified various drivers for the diffusion of innovations. However, no researcher has developed an integrated theory that either incorporates or differentiates among all these drivers. This issue is important because theory constitutes the key explanation for a phenomenon and informs good models and managerial practice.

Models

In the area of modeling, there are five pressing issues. First, most models have focused on modeling diffusion from slightly before the takeoff to approximately the slowdown, while a few models have focused on only takeoff and slowdown. Research needs to develop an integrated model of sales from commercialization to takeoff, during growth, and after slowdown. Second, the marketing literature has focused extensively on consumer durables and a little on movies. Research needs to consider other categories such as services, software, agricultural products, and medical products. Third, research needs to include diffusion of products using new media such as the Internet, where the process can be quite different from the traditional brick and mortar medium. Fourth, researchers are realizing that network effects can play a key moderating role in the takeoff or success of a new product. Thus, research needs to incorporate the role of network effects and technological choices of the suppliers on product diffusion. Fifth, the Bass model has long been the platform of diffusion research in marketing because of its simplicity and good predictive ability. Researchers can explore other platforms for research on diffusion.

Findings

While research in this area has led to some potential generalizations, further research can help to ascertain the extent to which these generalizations either are universal or vary by context. In particular, research could address the following three issues.

First, the bulk of research has focused extensively on identifying patterns of growth *across* countries and *over* time. There is also a need to identify subgroups or regions *within* such populations where we are likely to see varying rates of diffusion.

Second, all research has focused on successful products. Future research needs to study failed products to understand what aspects of their diffusion led to failure.

Third, studies of diffusion speed have been largely limited to the United States. Future research should consider the facets of cross-national speed of diffusion together with how technology and entry strategy affect the speed of diffusion.

Bass Model of Diffusion

Much of the literature follows an early model by Bass (1969). The Bass model is similar to epidemiological or contagion models, which describe the spread of a disease through the population due to contact with infected persons (see Bailey, 1957, 1975).

This section discusses the specification of the Bass model, evaluates the model's strengths and weaknesses, and discusses improvements in specification and estimation.

Specification

The basic assumption in the Bass model is that the adoption of a new product spreads though a population primarily due to contact with prior adopters. Hence, the probability that an individual purchases at time T, given that the individual has not purchased before, is a linear function of the number of previous buyers, thus

$$P(t) = f(t) / (1 - F(t)) = p + q / m\, Y(t) \tag{1}$$

where $P(t)$ is a hazard rate, which depicts the conditional probability of a purchase in a (very small) time interval $(t, t + \Delta)$, if the purchase has not occurred before t. $Y(t)$ refers to the cumulative number of adopters up to time t; m is the total number of initial purchases for the time interval for which replacement purchases are excluded. $F(t)$ denotes the cumulative fraction of adopters at time t and $f(t)$ is the likelihood of purchase at time t. By rearranging equation (1),

$$f(t) = (p + qF(t))[1 - F(t)] \tag{2}$$

Since $Y(0) = 0$, p represents the probability of an initial purchase at time 0 and its magnitude reflects the importance of innovators, the product $q / mY(t)$ reflects the pressure of prior adopters on imitators.

The number of adoptions at time t, $S(t)$, is derived by multiplying $f(t)$ in equation (2) with m, the market size, thus:

$$S(t) = mf(t) = pm + (q - p)\, Y(t) - q / m\, Y^2(t) \tag{3}$$

$$since\ f(t) = dF(t) / dt = (p + qF(t))[1 - F(t)] \tag{4}$$

By rewriting this equation, Bass solves the following differential equation:

$$dt = dF / (p + (q - p)F - qF^2) \tag{5}$$

to obtain

$$F(t) = (1 - e^{-(p+q)t}) / (1 + (q/p)e^{-(p+q)t}) \quad (6)$$

Hence, the cumulative adoptions are

$$Y(t) = m[(1 - e^{-(p+q)t}) / (1 + (q/p)e^{-(p+q)t})] \quad (7)$$

Bass rewrites equation (3) in a discrete form to obtain an equation for sales in only three unknown parameters, which he estimates by simple regression, thus:

$$S_t = a + bY_{t-1} + cY^2_{t-1}, \; t = 2, 3 \ldots \quad (8)$$

where S_t refers to sales at time t, Y_{t-1} refers to cumulative sales through period $t - 1$ and

$$a = p \times m, \quad (9)$$
$$b = q - p, \quad (10)$$
$$c = -q/m \quad (11)$$

Hence, he derives the values of p, q, and m from the estimated a, b, and c as follows:

$$p = a/m \quad (12)$$
$$q = -cm \quad (13)$$
$$m = (-b \pm (b^2 - 4ac)^{1/2}) / 2c \quad (14)$$

Evaluation

This section describes the strengths and limitations of the Bass model and relates it to other models in the literature.

Strengths

The derived and testable function of the Bass Model (1969), equation (8), has several excellent properties. First, because sales is a quadratic function of prior cumulative sales, the model provides a good fit to the S-shaped curve that is typical of the sales of most new products. Indeed, decades of subsequent research have shown that the simple Bass model fits sales almost as well as much more complex models that sought to correct its limitations (Bass, Krishnan, and Jain, 1994).

Second, the model has two very appealing behavioral interpretations. Bass interprets the coefficient p as the coefficient of innovation because it reflects the spontaneous rate of adoption in the population. He interprets q as the coefficient of imitation because it reflects the effect of prior cumulative adopters on adoption. Other researchers conservatively interpret p as the external influence referring to the influence of mass-media communications and q as internal influence referring to the influence of interpersonal communication from prior adopters (Mahajan, Muller, and Srivastava, 1990).

Third, the model enables the researcher to resolve an important concern of managers of new products, that is, to determine the time to, and magnitude of, peak sales (t^* and $S(t)^*$), respectively. Bass shows that the time to peak sales and the magnitude are, respectively:

$$t^* = (1/(p+q)) * \ln(q/p) \quad (15)$$
$$S(t)^* = m*(p+q)^2/4q \quad (16)$$

Fourth, the model encompasses two well-known earlier models in the literature. If p = zero, the Bass model reduces to a logistic diffusion function, assumed to be driven by only imitative processes (Fisher and Pry, 1971; Mansfield, 1961; Van den Bulte, 2000). If q = zero, the Bass model reduces to an exponential function assumed to be driven only by innovative processes (Bernhardt and Mackenzie, 1972; Fourt and Woodlock, 1960).[1] Hence, the Bass model makes fewer assumptions and is more general than these two models.

These four strengths of the Bass model account for its great appeal, popularity, and longevity in the marketing discipline. Indeed, it has spawned a paradigm of research in marketing, which remains unrivalled by any other model or theory.

Limitations

Despite its strengths and strong appeal, the Bass model (1969) suffers from several limitations. Subsequent research has sought to address these problems with varying degrees of success. We describe these efforts in the section that follows this one.

First, any individual fit of the Bass model has poor predictive ability. The model needs data at both turning points (takeoff prior to growth and slowdown prior to maturity) to provide stable estimates and meaningful sensible forecasts. However, by the time those events occur, the predictive value of the Bass model is limited. In other words, the Bass model requires as inputs two of the most important events that managers would like to predict: takeoff and slowdown.

Second, the model's parameters are unstable and fluctuate with the addition of new observations (Bemmaor and Lee, 2002; Golder and Tellis, 1998; Heeler and Hustad, 1980; Mahajan, Muller, and Bass, 1990; Van den Bulte and Lilien, 1997). This variation in estimates for small changes in observations leads one to question whether the parameters really capture the underlying behavior (internal and external influences). Indeed, researchers question the basic assumption that product growth is driven only by communication (Golder and Tellis, 1998; Van den Bulte and Lilien, 2001; Van den Bulte and Stremersch, 2004). One of the strengths of the model may account for the instability in parameters. The quadratic function fits the sales curve so well that it sacrifices estimating the true underlying behaviors (Golder and Tellis, 1998).

Third, the Bass model does not include the direct influence of any marketing variable such as price or advertising. This is a serious problem because most managers want to influence sales with these two variables. The model assumes, however, that the coefficients m or p capture the effect of such external influences.

Fourth, the product definition in the Bass model is static, that is, it assumes that the product itself does not change over time. However, there may be several technological changes within a product category itself, before a dominant design emerges (Srinivasan, Lilien, and Rangaswamy, forthcoming), and this variation is not allowed for in the Bass model.

Fifth, Bass used OLS regression in the model to estimate the values of p, q, and m. However, this method suffers from three shortcomings (Mahajan, Muller, and Bass, 1990): (1) There is likely to be multicollinearity between Y_{t-1} and Y^2_{t-1} making the parameter estimates unstable. (2) The procedure does not provide standard errors for the estimated parameters p, q, and m, and hence it is not possible to assess the statistical significance of these estimates. (3) There is a time interval bias because the model uses discrete time series data to estimate a continuous model.

Sixth, this tradition of research entails several problems in measuring the dependent variable (sales) and determining the starting and ending points of the time interval sampled. (1) Most researchers use sales as the dependent variable. As such, sales should consist of only first adoptions of the new product. However, in effect, most databases do not discriminate between first

purchase and repurchases when describing sales. (2) Sales should be from the very first year of commercialization of the new product. However, in effect, the models only use published sales figures, which often report sales when a product has already been selling well, if not after takeoff of the product. (3) Researchers do not define a clear stopping rule for the time interval. The period modeled should end when the entire market has made first purchases or at least when adoptions have peaked.

The next sections describe how researchers correct for some of these weaknesses by improving the estimation techniques, predictive ability, and model specification.

Improvements in Specification

The specification of the Bass model is very simple, as it contains no deterministic explanatory variables. Over the past thirty-five years, a vast body of literature has sought to enrich the model by including marketing variables, supply restrictions, and multiproduct interactions (such as the presence of competitive products, complementary products, and newer technological generations), incorporating time-varying parameters, replacement purchases, multiple purchases, and trial and repeat purchases, and by analyzing cross-country diffusion patterns. The subsections evaluate the literature concerning each of these improvements, concluding with an overall evaluation of this stream of literature.

Allowing Marketing Variables

Many authors consider the impact of marketing variables on new product diffusion (Bass, 1980; Bass, Krishnan, and Jain, 1994; Bhargava, Bhargava, and Jain, 1991; Danaher, Hardie, and Putsis, 2001; Horsky, 1990; Horsky and Simon, 1983; Jain and Rao, 1990; Jones and Ritz, 1991; Kalish, 1985; Kamakura and Balasubramanian, 1988; Krishnan, Bass, and Jain, 1999; Robinson and Lakhani, 1975).

A decline in price adds households whose reservation price structure accommodates the new prices. Thus, price declines could affect the ultimate market potential. Price declines could also stimulate the flow of households from being potential adopters to adopters by increasing the probability of adoption. Kamakura and Balasubramanian (1988) find that price seems to influence only the probability of adoption and only for relatively high-price goods. Hence, the role of price seems to be heterogeneous across products.

Other models incorporate the effects of advertising on diffusion (Horsky and Simon, 1983; Simon and Sebastian, 1987). For instance, Horsky and Simon (1983) include the level of the producer's expenditures on advertising at time t directly into the Bass model.

Researchers also consider the influence of the distribution process in influencing diffusion. Jones and Ritz (1991) assume that there are two adoption processes occurring for any new product—one for the retailers and one for the consumers. Moreover, the number of retailers who have adopted the product determines the size of the consumer's potential market. The authors show that even if the *consumer* adoption curve is exponential, when the initial level of distribution is limited, the pattern of consumer adoptions takes an S-shaped curve similar to that obtained from a Bass model.

Research on channels of distribution has focused typically on traditional brick-and-mortar channels. Rangaswamy and Gupta (2000) discuss the application of the Bass model to digital environments. They posit that the market potential for an innovation, the coefficient of imitation, and the coefficient of innovation will be larger, leading to increased sales and speed of adoption

through online channels. They also expect that in the digital environment, good products, with positive word-of-mouth will succeed faster, whereas bad products, with negative word-of-mouth, will fail faster.

Bass, Krishnan, and Jain (1994) include both price and advertising to give what they call, the Generalized Bass model, wherein:

$$f(t) / [1 - F(t)] = [p + qF(t)]x(t) \tag{17}$$

where $x(t)$ is the current marketing effort that reflects the impact of price and advertising on the conditional probability of product adoption at time t, such that

$$x(t) = 1 + \beta_1 \Delta Pr(t) / Pr(t - 1) + \beta_2 \Delta A(t) / A(t - 1) \tag{18}$$

where $\Delta Pr(t)$ refers to $Pr(t) - Pr(t - 1)$ and $\Delta A(t)$ refers to $A(t) - A(t - 1)$. Both these variables refer to the rates of changes in prices and advertising. The model reduces to the Bass model when price and advertising remain the same from one period to the next. Hence, the authors find that when percentage changes in the decision variables are constant the Generalized Bass model provides no better fit than the Bass model. Because the Bass model is quadratic in prior period's cumulative sales, it fits the S-shaped curve very well even when researchers omit marketing variables. However, when the coefficients for the decision variables are statistically significant, the Generalized Bass model provides a better fit than the Bass model.

No study has empirically tested for the effect of all the marketing variables simultaneously. The limitation of the empirical application by Bass, Krishnan, and Jain (1994) is that they consider the effects of changes in only price and advertising and not other marketing variables. However, the Generalized Bass model can potentially include all relevant marketing variables and hence is managerially relevant. The limitation of the model is that it considers only the effect of changes and not the absolute levels of these variables. It also does not allow for the influence of other important nonmarketing factors that influence product growth such as income changes.

Allowing Supply Restrictions

Jain, Mahajan, and Muller (1991) model the impact of restrictions on the production capacity or the distribution system on the diffusion process. They model the customer flow from being potential adopters to waiting applicants and from waiting applicants to adopters, as follows:

$$dA(t) / dt = (p + (q_1 / m)A(t) + (q_2 / m)N(t)) (m - A(t) - N(t)) - c(t)A(t) \tag{19}$$

$$\text{and } dN(t) / dt = c(t)A(t) \tag{20}$$

In equation (19), $dA(t) / dt$ reflects the rate of changes of waiting applicants. This is increased by the new applicants generated by the influence of both waiting population $A(t)$ and adopters $N(t)$ on the potential applicants, but is decreased by the conversion rate of waiting applicants to adopters where $c(t)$ is the supply coefficient. Equation (20) captures the impact of supply restrictions on adoption rate at time t. The growth process of the total number of new applicants is given by

$$dZ(t) / dt = dA(t) / dt + dN(t) / dt = (p + (q_1 / m)A(t) + (q_2 / m)N(t)) (m - A(t) - N(t)) \tag{21}$$

Though this model demonstrates a way to incorporate the effect of supply restrictions, the authors assume that the level of capacity grows with the number of back orders. However, in practice, this assumption may not hold. In addition, dissatisfied consumers might cancel orders or negative word-of-mouth might discourage others from ordering. Ho, Savin, and Terwiesch (2002) allow some waiting applicants to abandon their adoption decisions after a point in time in their theoretical model incorporating both demand and supply dynamics. Their results suggest that when faced with the choice between selling an available unit immediately versus delaying the sale to reduce the degree of future shortages, the firm should always favor an immediate sale. The authors thus show that the time benefit of immediate cash flows outweighs the limitation of demand acceleration.

Both these studies show sensitivity to distribution issues and offer an opportunity to blend operations planning and marketing research. Such a confluence helps managers to deal with the dilemma of keeping inventory low while making products available to consumers (Cohen, Ho, and Matsuo, 2000). Nevertheless, a still greater challenge is the tackling of competitive effects.

Allowing Competitive Effects

While most models typically aggregate across individual diffusion processes by studying the product class, asymmetries may exist in diffusion across brands within a category.

Researchers consider the impact of competitive entry on the diffusion of other brands. A new brand may have two effects: (1) it could increase the entire market potential for the category due to increased promotion or product variety; and (2) it could compete for the same market potential and hence slow down the diffusion of the existing brands.

For instance, in an empirical application of the model to the instant-camera market, Mahajan, Sharma, and Buzzell (1993) find that Kodak drew more than 30 percent of its sales from potential buyers of the pioneer brand, Polaroid. However, at the same time, its entry also led to an expansion of the market. Krishnan, Bass, and Kumar (2000) study the impact of a late entrant on the diffusion of a new product. Using brand level sales data from the cellular telephone industry, they find that the impact of entry of a new brand varies across markets, increasing the market potential of the category in some, hastening or slowing the diffusion process of other brands in others. Parker and Gatignon (1994) find that in the category of hair-styling mousses, for the pioneer, there seem to be strong brand identification effects and the diffusion is independent of competitive effects. For the second brand and other generic followers, prior adopters of the product class as a whole negatively influence their trials. The sensitivity of the diffusion of these brands to marketing variables also varies with the entry of competing brands.

Hence, research on competitive effects indicates that the diffusion process may differ depending on the order of a new brand's entry and the competition it faces. However, while the models help determine the direction of the impact, they do not clearly identify what causes these differential impacts across brands and markets.

Allowing Complementary Effects

Researchers have sought to account for the fact that the adoption of an innovation is dependent on the presence of related innovations (e.g., Rogers, 1995). Bayus (1987) incorporates this notion in forecasting the sales of new contingent products, that is, where the purchase of a product is contingent on the purchase of a primary product. In an empirical application to the CD-player market, the author demonstrates that the hardware sales can be modeled using a standard diffusion

framework and the software sales can be forecasted by calculating the sum of current and future software purchase streams of first-time hardware owners.

In markets with such indirect network externalities, the sales of software could affect hardware sales as well. Subsequent papers have accounted for two-way interactions in diffusion processes. Bucklin and Sengupta (1993) develop a model to examine the co-diffusion (both one-way and two-way interactions) of two complementary products—universal product codes (UPCs) and scanners. From their analysis of the two categories, the authors find that co-diffusion does exist and may be asymmetric in that one product has a stronger influence on the other product's diffusion than vice versa.

Gupta, Jain, and Sawhney (1999) incorporate the effect of indirect network externalities from suppliers of digital programming in modeling the evolution of digital TV sets. The authors use a combination of a latent class probit model of consumer demand and complementor response models. Consumer demand for digital TV is dependent on the hardware attributes and the software attributes of the set of competing products. Complementor (suppliers of digital programming) response is modeled as a function of the consumer demand for digital TV and exogeneous variables such as regulatory scenarios.

Lehmann and Weinberg (2000) focus on sequentially released products: new products that are released sequentially across channels (for instance, movie releases via movie theaters and then video rentals). A crucial question in the distribution of these products is the optimal timing of release across the channels in the face of cannibalization. Waiting too long to release the videos may reduce the marketing impact from the theater release. The authors determine that the sales of the initial product (theater attendance) can help forecast the sales of the sequential product (videotape rentals), and also that the optimal time to release the video is sooner than what is being done in practice.

These models reflect growing efforts to understand strategic interdependencies among complementary and competing products. It would be useful to model the effects of supplier actions/reactions, apart from consumer response, on complementor response. It would also be useful to trace these effects when a new market of an initially complementary product grows to the extent that it becomes a competitive product. For example, mobile phones have become competitive with landlines (Shocker, Bayus, and Kim, 2004). A related issue is modeling the evolution of successive generations of products.

Allowing Technological Generations

Norton and Bass (1987) assess the market penetration for successive generations of a high-technology product. The diffusion equation for the first-generation product when r_2 is the time of introduction of the second-generation product is

$$S_1(t) = m_1 F_1(t) - m_1 F_1(t)\, F_2(t - r_2) \tag{22}$$

The diffusion equation for the second-generation product is

$$S_2(t) = F_2(t - r_2)[m_2 + F_1(t)\, m_1] \tag{23}$$

where $S_i(t)$ refers to the sales of generation i in time period t, $F_i(t)$ refers to the fraction of adoption for each generation, where $i = 1,2$; m_1 refers to the potential for the first generation, and m_2 refers to the potential for the second generation. Hence, this simultaneous model captures both

adoption and substitution effects. The authors empirically test the model in the semiconductor industry. Norton and Bass (1992) extend this model to cover the electronics, pharmaceutical, consumer, and industrial goods sectors.

Mahajan and Muller (1996) account for the fact that users may skip a generation and buy a later generation (leapfrogging behavior) in a model that also captures both adoption and substitution patterns for each successive generation of a durable technological good. They propose a "now or at maturity" rule for new product introduction, that is, they determine that the optimal rule for a firm to use in the decision to introduce a new generation of a technological durable good is either to introduce it as soon as possible or to delay its introduction until the maturity stage in the life cycle of the first generation.

Kim, Chang, and Shocker (2000) try to capture not only the substitution effects between successive generations within a product category, but also complementary and competitive effects among product categories in a single model. Hence, the market potential of a generation of a product category is affected not only by technological substitution from another generation within the category but also by the sales of other categories. The authors illustrate the model by capturing the growth dynamics among pagers, analog and digital cellular phones, and the cordless telephone 2 in the wireless telecommunications market in Hong Kong. Their results indicate that the category of pagers that was introduced earliest seems to have a positive impact on the cellular phone's market potential while the cellular phone appears to have a negative impact on the pager's market potential. The cordless telephone 2, however, has a positive impact on both pager and digital cellular phone, possibly because it serves as a complement.

Danaher, Hardie, and Putsis (2001) capture the role of interdependencies in marketing-mix variables in the diffusion of successive generations of technology and show that there are substantial price response interactions across two generations of technology in the cellular telephone industry in Europe.

Allowing Time-Varying Parameters

The parameters of the Bass model can change over time due to several factors such as the changing characteristics of the population, products, or economy. Researchers have looked for ways to incorporate this dynamic specification into the Bass model (Bass, Krishnan, and Jain, 1994; Bretschneider and Mahajan, 1980; Bretschneider and Bozeman, 1986; Horsky, 1990; Lavaraj and Gore, 1990; Mahajan and Peterson, 1978; Sharma and Bhargava, 1994; Xie et al., 1997).

Mahajan and Peterson (1978) model the market potential as a function of time-varying exogenous and endogenous factors such as socioeconomic conditions, population changes, and government or marketing actions. Easingwood, Mahajan, and Muller (1983) develop a nonuniform influence model that allows the coefficient of imitation to be time varying. They use the specification

$$dF(t) / dt = [p + qF(t)^{\delta}\,][1 - F(t)] \tag{24}$$

where δ is called the nonuniform influence factor. If the value of δ equals 1, it indicates that diffusion takes place with uniform influence, similar to the Bass model. Values of δ between 0 and 1 cause an acceleration of influence leading to an earlier and higher peak. This leads to a high initial coefficient of imitation, which declines with penetration. Values of δ greater than 1 cause delay in influence leading to a lower and later peak. This indicates that the coefficient of imitation increases with penetration. Indeed, Easingwood (1987) demonstrates that nine classes of diffusion shapes can be determined by examining different values of the coefficient of imitation and

the nonuniform influence parameter. For instance, a product with low values of both parameters has a brief initial period where influence is relatively high, leading to a steep start to the diffusion process. Subsequently, adoption is constant and low as influence becomes low.

Sharma and Bhargava (1994) question the assumption that all prior adopters are equally influential. They propose an extension of the nonuniform influence model where not only is the influence of previous adopters considered nonuniform, but also adopters who have adopted in the recent past are considered more influential than those who did so much earlier.

Several researchers propose alternate functional forms capable of allowing for dynamic formulation of the parameters. Hjorth (1980) proposes the term "IDB" to denote the distribution that can describe increasing (I), decreasing (D), constant and bathtub (B) shaped failure rates. Lavaraj and Gore (1990) demonstrate the use of this distribution to model an adoption function flexible enough to incorporate increasing, decreasing, constant or bathtub shapes, and nonuniform parameters. Bretschneider and Mahajan (1980), Bretschneider and Bozeman (1986), and Xie et al. (1997) demonstrate the use of feedback estimation approaches to estimate dynamic parameter paths.

The advantage of such dynamic specifications is that they provide a realistic interpretation of the diffusion process. They not only improve the estimation results but also help to examine the causes of accelerating or decelerating influences over time. However, the gain of accuracy and insights from the model comes with a loss of parsimony.

Allowing Replacement and Multi-Unit Purchases

Though the Bass model covers only first purchases of a durable good, typically the sales comprise both replacement and multiple purchases. Several papers in the diffusion literature cover these phenomena (Bayus, Hong, and Labe, 1989; Kamakura and Balasubramanian, 1987; Olson and Choi, 1985; Steffens, 2002).

Kamakura and Balasubramanian (1987) incorporate the role of replacement purchases in the following model:

$$y(t) = [a + bX(t)]\,[\alpha Pop(t)\,Pr^{\beta}(t) - X(t)] + r(t) + e(t) \tag{25}$$

where $y(t)$ is the sales of a product at year t, $Pr(t)$ is the price index, $Pop(t)$ is the population of electrified homes, $X(t)$ is the total number of units in use at the beginning of year t assuming that all dead units are replaced immediately, and $r(t)$ is the number of units that have died or need replacement at year t. The parameters a and b denote the coefficients of innovation and imitation, β denotes the impact of price changes on ultimate penetration, and α refers to the ultimate penetration, if price was kept at its original level. The researchers demonstrate the incorporation of replacement purchases into a diffusion setting even when replacement data are not specifically available.

A related problem is the purchase of multiple units by one household. Steffens (2002) develops and tests a model for multiple unit adoptions of durable goods. He models first-unit ownership using a Bass diffusion model with a dynamic population potential. External influences and earlier adopters of multiple units drive a proportion $\prod_1$ of first unit adopters to making multiple purchases giving the model for multiple unit adopters $M(t)$ as

$$dM(t)/dt = (\prod_1 N(t) - M(t))\,(a_1 + b_1 M(t)) \tag{26}$$

where $N(t)$ refers to the number of cumulative adopters at time t, a_1, and b_1 are parameters representing external and word of mouth influences on the first multiple unit adoption. There are people

who adopt more than two units. The upper potential of subsequent multiple unit adoptions is modeled as a fixed proportion $\prod_2$ of multiple unit adopters $M(t)$. The model for subsequent multiple unit adoptions $Q(t)$ is

$$dQ(t) / dt = (\prod_2 M(t) - Q(t)) (a_2 + b_2 M(t)) \quad (27)$$

where a_2 and b_2 are parameters representing external influences and word-of-mouth influences on subsequent multiple unit adoptions.

While these models throw light on how to capture replacement demand and multiple purchases, they do not give insights on what drives these processes. For instance, Olson and Choi (1985) assume that the life of a product ends due to wear-out failure only and hence product age and wear-out drive replacement demand. Other factors such as ability to pay could also determine replacement demand (Bayus and Gupta, 1992).

Allowing Trial-Repeat Purchases

Markets grow not only through acquiring new trials (first purchases) but also through repeat purchases by the original buyers. While some researchers look at trial-repeat purchase behavior in the context of packaged goods industries (Blattberg and Golanty, 1978; Fourt and Woodlock, 1960), other researchers examine trial-repeat purchase in the context of the pharmaceutical goods industries (Hahn et al., 1994; Lilien, Rao, and Kalish, 1981).

Hahn et al. (1994) develop a four-segment trial-repeat purchase model in which the four segments comprise nontriers, triers, post-trial nonrepeaters, and post-trial repeaters. They find that while word-of-mouth from prior adopters and marketing efforts influence trial, product quality, marketing activity, and market familiarity influence the repeat rate.

Allowing Variations Across Countries

The initial application of the Bass model was limited to the study of diffusion of new products within the United States. Researchers have since examined the role of wealth, social system heterogeneity, cosmopolitanism, activity of women, mobility, mass media availability, culture, and learning, in inducing variations in diffusion parameters across countries (Dekimpe, Parker, and Sarvary, 1998, 2000a, 2000b; Ganesh and Kumar, 1996; Ganesh, Kumar, and Subramaniam, 1997; Gatignon, Eliashberg, and Robertson, 1989; Helsen, Jedidi, and DeSarbo, 1993; Kumar and Krishnan, 2002; Kumar, Ganesh, and Echambadi, 1998; Putsis et al., 1997; Takada and Jain, 1991; Talukdar, Sudhir, and Ainslie, 2002; Van den Bulte and Stremersch, 2004).

Evaluation

These improvements have individually addressed various limitations of the Bass diffusion model. While a single model, which incorporates all these improvements would enable a rich and comprehensive analysis, this benefit would likely come at the loss of parsimony. As a result, the contributions remain separate. In the meantime, managers and analysts can use any one of these models that addresses the most salient limitation for the product and category they are modeling. In addition, many of these models assume that the underlying behavior driving the process is knowledge dispersion through communication across consumers. This is, however, only *one* of the many processes driving growth. We describe models capturing alternate processes in a later section (alternate models of diffusion).

Improvements in Estimation

Since the Bass (1969) model, many articles have attempted to better estimate the parameters of these models (Lenk and Rao, 1990; Schmittlein and Mahajan, 1982; Srinivasan and Mason, 1986; Venkatesan, Krishnan, and Kumar, 2004; Xie et al., 1997). Schmittlein and Mahajan (1982) propose a maximum likelihood estimation (MLE) to estimate the parameters of the Bass model from the expression of the cumulative fraction of adopters $F(t)$ derived in the Bass model. Though the maximum likelihood approach eliminates the time-interval bias, Srinivasan and Mason (1986) suggest that the approach underestimates the standard errors of the parameter estimates as it focuses only on sampling errors and ignores other forms of errors. They propose an alternative estimation technique termed the nonlinear least squares approach. We classify subsequent improvements as belonging to one of four approaches: nonlinear least squares, hierarchical Bayesian methods, adaptive techniques, and genetic algorithms.

Nonlinear Least Squares

Srinivasan and Mason (1986) propose the following nonlinear least squares approach:

$$S(i) = m[F(t_i) - F(t_{i-1})] + u_i \tag{28}$$

where m is the number of eventual adopters, and $S(i)$ is the sales in the interval (t_{i-1}, t_i)

$$S(i) = m[(1 - e^{-(p+q)ti})/(1+ (q/p)\, e^{-(p+q)ti}) - (1 - e^{-(p+q)t\,i-1})/(1 + (q/p)\, e^{-(p+q)t\,i-1})] + u_i \tag{29}$$

where i =1, 2,…T

Jain and Rao (1990) also propose a similar nonlinear approach. These models can be easily estimated using standard software packages such as SAS. The nonlinear approach provides the following advantages over the OLS approach. First, the model is not constrained to be linear in the parameters. Second, the model overcomes the time-interval bias of the OLS estimation. Third, the model provides valid estimated standard errors and *T*-ratios.

However, researchers have determined that the nonlinear technique suffers from a few limitations. The estimates can be poor and noisy when obtained from data sets with too few observations. Van den Bulte and Lilien (1997) point at a downward bias in the estimates of m and p and an upward bias in the estimates of q. Using longer time series and using data with higher frequency is associated with lower estimated q / p values (Van den Bulte and Stremersch, 2004). These biases may cause managers to underinvest in advertising and external media and overestimate the impact of the social contagion.

One reason for the biases could be the omission of time-varying parameters. For instance, as price falls, lower income households may be better able to afford the new products, increasing the market potential, while the nonlinear least squares estimation would provide a downward-biased estimate of m. However, Van den Bulte and Lilien (1997) show and Bemmaor and Lee (2002) corroborate that a bias exists even if the model is correctly specified, which is perhaps more surprising.

In addition, the model proposed by Srinivasan and Mason (1986) does not allow for parameter updating and hence does not have good predictive ability for forecasting sales of very new products. Parameter updating is necessary to improve the stability of new product market forecasts. The next section examines attempts by researchers to incorporate Bayesian updating procedures with the nonlinear least squares estimation method.

Hierarchical Bayesian Methods

To estimate the Bass model reliably and make accurate predictions, researchers need data beyond the two inflexion points: takeoff and slowdown. Some researchers propose using expert judgments coupled with industry surveys or purchase intention questionnaires (Infosino, 1986) or information acceleration techniques (Urban, Weinberg, and Hauser, 1996) to develop prelaunch estimates.[2] Other researchers suggest using data for similar products, termed as analogies, for this purpose (Easingwood, 1989). However, to do so, we need to answer two questions: (1) How can products be classified as similar/dissimilar? (2) What happens when products are dissimilar? Bayus (1993) proposes a solution to the first question by developing a product segmentation scheme using demand parameters, marketing, and manufacturing-related variables. He demonstrates its application to generate pre-launch forecasts for the high-definition TV.

As a solution to the second question, that is, when data of only dissimilar products are available, researchers propose the use of hierarchical Bayesian methods to model new product sales more accurately (Lee, Boatwright, and Kamakura, 2003; Lenk and Rao, 1990; Neelamegham and Chintagunta, 1999; Talukdar, Sudhir, and Ainslie, 2002). Here, the forecaster can obtain information from different products that share some common structures, even when no sales data for the focal product are available. Researchers then develop prelaunch forecasts for the focal product, updating them when sales information about the focal product do become available (Putsis and Srinivasan, 2000). The approach helps to produce more stable forecasts (Lenk and Rao, 1990; Neelamegham and Chintagunta, 1999; Talukdar, Sudhir, and Ainslie, 2002).

Talukdar, Sudhir, and Ainslie (2002) demonstrate an application of the hierarchical Bayesian technique to the international diffusion context, pooling information across multiple products and countries. They use the nonlinear Bass diffusion model proposed by Srinivasan and Mason (1986), while incorporating two changes: (1) they model the error term in a multiplicative fashion to reduce the effects of heteroscedasticity, and (2) they model autocorrelated errors to allow for the possibility of serial correlation. They model the evolution of a cumulative fraction of adopters over time as

$$F_{pr,c}(t)= \{1-\exp[-(p_{pr,c} + q_{pr,c})\, t]\}/\{1 + (q_{pr,c}/p_{pr,c})\exp[-(p_{pr,c} + q_{pr,c})\, t]\} \quad (30)$$

where the subscripts *pr* and *c* refer to the product and country, respectively, and *t* refers to the time. The subscripts denote the fact that the authors allow for heterogeneity in the values across both countries and products. They find that their procedure yields lower mean-squared errors when compared either to models that estimate the parameters of the Bass model for one product across many countries (Gatignon, Eliashberg, and Robertson, 1989) or to models that estimate the parameters across multiple products for one country (Lenk and Rao, 1990). However, the limitation of this model is that the parameters are not allowed to vary over time.

Adaptive Techniques

Other researchers use stochastic techniques that allow parameters to vary over time to model new product growth. These techniques use feedback filters and Bayesian techniques to update the parameters over time (Bretschneider and Bozeman, 1986; Bretschneider and Mahajan, 1980; Xie et al., 1997).

Xie et al. (1997) propose the use of the *augmented Kalman filter* (AKF) to update parameter estimates as new data become available. The estimation technique uses continuous and discrete observations (AKF (C – D)) thus:

$$dn / dt = f_n [n(t), u(t), \beta, t] + w_n \tag{31}$$

$$d\beta / dt = f_\beta [\beta, n(t), t] + w_\beta \tag{32}$$

$$z_k = n_k + v_k \tag{33}$$

where n is the cumulative number of adopters, u is the marketing mix variable vector, β is the unknown parameter vector, w_n and w_β are the process noise, n_k and z_k are the actual and observed cumulative number of adopters at time t_k, and v_k is the observation noise.

Equation (31) is the *systems* equation depicting the diffusion rate at time t (the evolution of the cumulative adopters) as a function of the current adopters (n), the marketing mix variables (u), the diffusion parameters β, time t, and random noise w_n. Equation (32) specifies the time varying behavior of the parameters while equation (33) is the *measurement* equation that specifies the errors in measuring the number of adopters. At time 0, based on prior information, the best prior estimates of the parameter distributions are developed. At a specific time, the diffusion model predicts the sales and parameter values for the next period, using a *time updating process* given the current observations. There is also a *measurement update* as new information arrives, using the forecast error between the predicted and observed number of adopters.

The authors show that the augmented Kalman filter estimates the parameters directly, avoids time interval bias, forecasts more accurately than other techniques such as the nonlinear least squares and the OLS, and can estimate time-varying parameters. This technique is, however, not as easy to use as the nonlinear regression.

Genetic Algorithms

Venkatesan, Krishnan, and Kumar (2004) propose the use of genetic algorithms to estimate the Bass model. They find that since this technique combines the advantages of both systematic search and random search, it has a better chance of reaching the global optimum as compared with sequential-search-based nonlinear least squares. In simulations, the authors find that unlike the nonlinear least squares method, this technique does not suffer from bias and systematic change in parameter values as more observations are added. The authors also find that the mean of the absolute deviations in forecasting for the genetic algorithms is significantly lower than the augmented Kaman filter estimation technique. However, the technique does not allow for the fact that the parameters can vary over time.

Evaluation

This body of research indicates that improved estimation techniques, combined with product classification schemes such as that developed by Bayus (1993), can lead to increased accuracy in the forecasts of peak sales and the sales evolution from takeoff to peak during the growth stage. However, the models, which focus on the general diffusion curve, have paid scant attention to the turning points in sales, such as slowdown and especially takeoff. For these critical events, researchers have proposed entirely new models, which will be described below in the section on modeling the turning points in diffusion.

Alternate Models of Diffusion

Due to the many limitations of the Bass model, especially its reliance on only a process of communication, several researchers have departed from the framework and proposed entirely new models. Three of these relate to alternate drivers: affordability, heterogeneity, and strategy; and two relate to alternate phenomena, spatial diffusion and diffusion of entertainment products.

Affordability

The assumption that underpins the Bass model is that the market consists of a homogenous population of adopters, all of whom can afford the product equally well. Their different times of adoption occur because they hear of the product, either from the firm or from other adopters, at different times. We review models that question this assumption.

Golder and Tellis (1998) propose an alternate model based on the idea of *affordability.* They argue that most consumers know about new products long before purchasing them. They hold back from purchasing these products due to high prices. New products are expensive when they first appear on the market, and become attractive to the mass market only when their price drops sufficiently. Consumers delay their purchases until prices decline or incomes rise sufficiently for them to afford the new product. Hence, *affordability* is a key driver of new product growth. The authors wish to model product sales as a function of price, income, consumer sentiment, and market presence, in a parsimonious manner. Hence, they use the Cobb-Douglas model, which is:

$$S = P^{\beta 1} \cdot I^{\beta 2} \cdot CS^{\beta 3} \cdot MP^{\beta 4} \cdot e^{\varepsilon} \tag{34}$$

where S denotes sales, P denotes price, I denotes income, CS denotes consumer sentiment, and MP denotes market presence. While this model does not fit the data as well as the Bass model, the estimates of the coefficients and price response seem more stable with the addition of observations to the data series and the model seems to yield better year-ahead forecasts.

Horsky (1990) develops a model that incorporates the role of price and income (affordability) in addition to the word-of-mouth effect in aiding sales growth. He assumes distributions for both wages and prices, and considers that only a proportion of the population will purchase the product. He models sales as:

$$S(t) = [\theta M(t) / (1 + e^{-(K + \dot{w}(t) - k\, p(t)) / \delta(t)}) - Q(t)]\, [\alpha + \beta Q(t)] \tag{35}$$

where $M(t)$ refers to the number of households in the population, with an average wage $\dot{w}(t)$, its dispersion being $\delta(t)$; $p(t)$ refers to the average price of the durable; θ refers to the fraction of the population who will buy the product; and $Q(t)$ is the number of eligible individuals who have purchased before time t. The term $[\alpha + \beta Q(t)]$ depicts how an eligible individual may become aware of a product due to word-of-mouth information from those who have already purchased the product. If the size of the population, the income distribution, and price remain constant, the equation reduces to the more familiar

$$S(t) = [N - Q(t)]\, ([a + \beta Q(t)] \tag{36}$$

where N equals the number of people eligible to purchase. In an empirical application of the performance of the model, the author determines that in categories where the word-of-mouth

effects are weak, the model fits the data better than the Bass model. The author also derives the policy implication that a price skimming strategy is appropriate for a monopolist when weak word-of-mouth effects exist and a price penetration strategy is appropriate when word-of-mouth effects are strong.

Evaluation

These models have the advantages of specifically accounting for the role of price, income, and product benefits in the adoption process, hence providing a richer interpretation. However, this richness comes at the cost of either parsimony, ease of interpretation, or predictive ability, which are the key benefits of the Bass model.

Heterogeneity

Some researchers have looked at the adoption problem as a decision problem under conditions of belief updating and heterogeneity among consumers (Roberts and Lattin, 2000). The models that fall under this classification have typically been termed "disaggregate level" diffusion models as they do not assume an aggregate homogenous population. Individual level models first originated in the economics literature (Feder and O'Mara, 1982; Hiebert, 1974; Stoneman, 1981). Here we review eleven models, the first seven predominantly from marketing and the next four from economics.

Roberts and Urban (1988) assume that individual consumers choose the brands that provide them with the highest expected risk-adjusted utility and update their prior beliefs about the brand in a Bayesian fashion with the arrival of new information. This updating occurs in two ways. (1) Word-of-mouth communications (positive or negative reviews) may change the estimated mean attribute levels of the brand. (2) Uncertainty may decline due to the availability of new information. The authors derive the individual hazard of purchase as a multinomial logit model. The authors apply the model to the prelaunch planning of a new automobile where they collect measures of mean values, perceived attribute levels, uncertainty, and purchase probabilities from respondents, and aggregate the probabilities of purchase over consumers to get the expected market share.

Oren and Schwartz (1988) study the choice between an innovative new product with uncertain performance and a currently available product with certain performance. Uncertainty leads risk-averse consumers to delay adoption until they get more evidence on the performance. Early adopters are those who are less averse to risk while later adopters are imitators who delay purchase until they get enough information from the market to overcome their initial uncertainty. The authors derive an aggregate-level logistic market growth model for market share.

Chatterjee and Eliashberg (1990) develop a model where consumers are risk averse and adopt a product only if their expectations of its performance exceed a "risk hurdle" and a "price hurdle." The consumers update their expectations of performance based on the information (positive or negative) they receive. Consumers are hence heterogeneous in the cumulative information they need for adoption. The authors derive a diffusion curve by aggregating the predicted individual adoption behavior over the population. The authors show conditions in which their model can reproduce the Bass (1969) and Fourt and Woodlock (1960) models. The authors obtain individual level parameters for price, risk, and uncertainty by means of a survey of respondents.

Bemmaor (1994) demonstrates that an aggregate level diffusion model can be derived from individual level heterogeneity assumptions in the gamma/shifted Gompertz model (G/SG). Bemmaor and Lee (2002) demonstrate the superiority of this model to the Bass model in terms of forecasting

ability. In this model, individual level adoption timing is randomly distributed according to a two-parameter shifted Gompertz distribution whose cumulative distribution function is as follows:

$$F(t / \eta, b) = (1 - e^{-bt}) \exp(-\eta e^{-bt}),\ t > 0 \tag{37}$$

where b is a scale parameter constant across all consumers, and η captures an individual's propensity to buy, which varies across consumers according to a gamma distribution, with a shape parameter α, and a scale parameter β. Here, small values of α indicate greater heterogeneity. The authors derive an aggregate level distribution of adoption times given by

$$F(t) = (1 - e^{-bt}) / (1 + \beta e^{-bt})^{\alpha} \tag{38}$$

Here, if $\alpha = 1$, $b = p + q$ and $\beta = q / p$, equation (38) reduces to the Bass model, and if $\alpha = 0$, equation (38) reduces to the exponential model. The authors test the model by forecasting the sales of twelve new products and find that the G/SG model provides better forecasts than the Bass model. However, they show that with the addition of more observations, there are systematic changes in the market potential and imitation coefficients. Hence, the more complex G/SG model shows greater parameter instability than the Bass model.

Song and Chintagunta (2003) develop a model in which they account for both heterogeneity and forward-looking behavior by consumers in the adoption of new high-tech durables products. They use aggregate sales data, rather than intent measures obtained from surveys, to estimate the model. In the model, consumers have expectations of the future states of prices and quality levels, both of which change over time, leading to a probability distribution on the transition of future states of these variables conditional on current states. A consumer can choose either to buy or not to buy a product in each period, selecting the alternative that maximizes the discounted sum of expected utility. The authors aggregate these individual level adoption decisions to obtain an aggregate diffusion curve, and use the more easily available aggregate level data to estimate the individual level decision parameters.

Sinha and Chandrasekaran (1992) demonstrate the application of a split hazard model to analyze the probability of adoption and adoption timing of an individual firm. By splitting the population into eventual adopters and nonadopters, and modeling both the probability and the timing of adoption as a function of individual level variables, they capture heterogeneity at the individual level. They test their model in the context of the adoption of automated teller machines in a sample of individual banking firms.

Chandrashekaran and Sinha (1995) account for variation in the volume of adoption as well as the timing of adoption by applying a split-population Tobit duration model in examining the adoption of personal computers by a sample of firms.

Karshenas and Stoneman (1993) and Stoneman (2002) describe what they term "rank," "stock" or "order" effects. In models considering "rank" effects, actors adopt as soon as the utility of the innovation exceeds some critical level or threshold. If the utility increases systematically over time and the thresholds follow some bell-shaped distribution, then the cumulative number of adopters, that is, the diffusion curve, will be S-shaped. In the consumer marketing literature, income distribution within a population can determine reservation prices, and hence pose one such threshold (Van den Bulte and Stremersch, 2004). In models considering "stock" effects, the assumption is that the marginal benefit from adoption decreases with the number of prior adopters (Karshenas and Stoneman, 1993; Stoneman, 2002). Over time, cost of acquisition falls, increasing the number of adopters. As more firms adopt the new technology, costs of production fall, increasing output.

As a result, the industry price falls and adoption is unprofitable beyond a certain point. In the economics literature, such models typically follow a game-theoretic approach (Reinganum, 1981). In models incorporating the "order" effects, the assumption is that there are first-mover advantages in using a new technology. The returns to the firm from the new technology depend on its position, with higher-order firms getting more returns than lower-order firms do. Each firm, considering how moving down the order affects its return, generates the diffusion path. For any given costs of acquisition, only some firms will find it profitable to adopt at a given point in the order, and only these numbers adopt. As costs of acquisition fall, more firms adopt. Fudenberg and Tirole (1985) develop a game theoretic model where they argue that earlier adopters get the highest return and hence there will be a race to be an early adopter, and the decisions of higher-order firms can then influence the decision of lower-order firms.

Karshenas and Stoneman (1993) determine the effect of rank, stock, order, and epidemic effects on the diffusion of CNC machine tools in the U.K. engineering industry. They estimate a hazard model of the form

$$h(t / X, \beta) = h_0(t)\, exp(X' \beta) \tag{39}$$

where X incorporates acquisition costs, cumulative number of adopters at time t (stock), firm characteristics (rank), expected change in the number of cumulative adopters in the time interval $(t, t + 1)$ (order), price, and expected change in price, and the baseline hazard denotes the epidemic effects. They find that rank and endogenous learning effects play an important role in the diffusion process, but find little support for the stock and order effects prescribed by game theoretic models, *lending support for the interest paid by the marketing literature to the communication process in adoption.*

Evaluation

Following the Bass model, the vast tradition of diffusion research in marketing has focused on communication among potential adopters and prior adopters as the main driver of diffusion. In contrast, the models discussed in this section indicate alternate reasons as to why individual consumers adopt new products and change their judgments over time.

However, these models, which focus extensively on individual level adoption decisions, have some limitations. First, most individual models lack the parsimony and ease of understanding that are the strengths of aggregate level models. Second, when individual level models use aggregate level data, it is difficult to identify the precise drivers of the adoption process.

Strategy

By strategy, we mean the explicit modeling of a firm or a central decision maker's choices such as market entry, marketing mix efforts, and location. In this section, we consider three such models. While some extensions of the Bass model do consider the marketing mix, as seen in a previous section (Bass, Krishnan, and Jain, 1994), such extensions are subservient to the model structure and lead to potentially understated effects for marketing variables.

DeKimpe, Parker, and Sarvary (2000a) consider two stages in the technological adoption of digital communication switches: (1) the time between the first availability of an innovation in the world and its introduction in a country (the implementation stage), and (2) the time between the introduction of an innovation into a country and its full adoption (the confirmation stage). They

examine the impact of economic, sociodemographic factors, installed base, and the international experience of the innovation on the transition times from one stage to another, using the coupled hazard approach. The authors point out that for telecommunications innovations, the local government or a central communications unit often acts as a key decision maker in setting standards and regulations. This may affect the product's diffusion path. For instance, in some small countries, the central decision-making unit may decide to replace the old technology fully with the new technology, and hence these countries may reach full penetration immediately on adoption, whereas other countries may exhibit the more gradual S-shaped diffusion path.

Van den Bulte and Lilien (2001) reexamine the medical innovation study (Coleman, Katz, and Menzel, 1966). This study examines the role of social networks in the diffusion of the broad-spectrum antibiotic tetracycline among 125 physicians in the United States in the 1950s. Van den Bulte and Lilien (2001) use a discrete time hazard modeling approach to examine the role of both social influence and marketing efforts by drug companies in influencing the hazard of adoption by a physician. They find that marketing efforts, rather than contagion seem to influence the diffusion process, and indicate that the medical innovation study might have confounded social contagion with marketing effects.

Bronnenberg and Mela (2004) study the spatial and temporal introduction of two brands in the frozen pizza category in the United States. The process begins with manufacturers deciding which markets to enter. Subsequently, in the markets that they enter, manufacturers offer the product along with incentives to retail chains. The retail chain decides whether to approve the brand for distribution on its entire trade area. Individual stores from this chain can carry the brand once it becomes locally available and is approved for adoption. The authors model the manufacturer's timing of local market entry and the retailer's timing of adoption of the brand, conditional on entry, using a discrete time hazard modeling approach. They determine that manufacturers sequentially enter markets based on the spatial proximity to markets already entered, and based on whether the chains in these markets have previously adopted the product elsewhere. The retail chains adopt the product, based on whether competing chains have adopted the product, and the manufacturers push into the trade area of the retailer. The study highlights the importance of taking into account the marketing actions (launch strategy) of manufacturers, without which the effect of local competitive contagion may be overstated. The study also points out the importance of understanding how products diffuse over *space*, which we elaborate upon in the next section.

Evaluation

Researchers who consider strategic factors, such as marketing variables or entry decisions, find that these factors often dominate the role of communication in driving diffusion (Bronnenberg and Mela, 2004; Sultan, Farley, and Lehmann, 1990; Van den Bulte and Lilien, 2001). This finding highlights the need to consider such variables in order to avoid spurious results.

Modeling Diffusion Across Space

Spatial diffusion models address the way products diffuse over *space* rather than over *time* as the prior models do. Though not considered explicitly in the field of marketing, spatial diffusion has had a long tradition of research in the fields of geography and agricultural history, originating in the seminal work of Hagerstrand (1953).[3] There are various types of spatial diffusion (Morrill, Gaile, and Thrall, 1988). *Contagious* diffusion occurs when the distance or adjacency is the controlling factor, for instance, the spread of infectious diseases. *Expansion* diffusion describes a

process similar to that of a wildfire, when there is a source and the diffusion occurs outward from the source. *Hierarchical* diffusion occurs when diffusion progresses through an ordered series of classes, such as a phenomenon first being observed in the largest city, then jumping to the next largest, and so on. *Relocation* diffusion occurs when the number of agents with the diffusion characteristics does not change. The agents merely change spatial location or as the trait passes on to additional agents, it is lost in the original agents. Here we consider some aspects of the seminal work by Hagerstrand (1953) as well as four models in marketing that examine explicitly the notion of diffusion across space (Bronnenberg and Mela, 2004; Garber et al., 2004; Mahajan and Peterson, 1979; Redmond, 1994).

Hagerstrand (1953) conducts a detailed mapping of the geographic spread of agricultural indicators such as state-subsidized pastures and of general indicators such as postal checking services, automobiles, and telephones. He observes that a synoptic growth curve could conceal a large number of individual events that occur simultaneously in different parts of the observed area. Typically, diffusion seems to have the following spatial regularities: at first, there is a local concentration of initial acceptance followed by a radial dissemination outward while the original core of acceptance continues to become denser. Finally, growth ceases, as there is saturation. For agricultural indicators, the initial acceptance groups are clear and radial dissemination proceeds along clear-cut lines. For instance, the acceptance of state-subsidized pastures spreads from the west to the eastern part of the area. In contrast, for general indicators, the initial acceptance is more dispersed and the subsequent dissemination less orderly. Much of Hagerstrand's work is relevant to marketing. For instance, he introduces the notion of a "mean information field" where the frequency of contacts in a social network is assumed to diminish with distance. He also argues that potential adopters may vary in their "resistance" to the innovation, leading to a longer period of incipient growth and a greater degree of spatial concentration that is evident in the diffusion of some products.

Mahajan and Peterson (1979) introduce the notion of the "neighborhood effect" in technological substitution models in the marketing literature, that is, the further a region is from the "innovative region," the later substitution will occur.

Redmond (1994) argues that diffusion models typically assume spatial homogeneity by examining the process at a national level, and this ignores variations within a country. In an application of the Bass model to the diffusion of two consumer durables across nine regions within the United States, he determines that differing local conditions and demographics across regions lead to differing diffusion rates within a country.

Garber et al. (2004) argue that it is possible to predict the success of new products by looking at spatial patterns of diffusion by means of complex systems analysis. In such an analysis, the market is a matrix in which the discrete cells represent adoption by individuals. Each cell interacts with the other cells, the interactions not being limited to strictly neighboring cells (in what is termed a "small-world" framework). The value "0" represents nonadopters and "1" represents adopters; "p" represents the probability that an individual will be affected by external factors, and "q" the probability that an individual is affected by an interaction with a single other individual who has adopted the product. The probability that an individual adopts at time t given that the individual has not yet adopted is:

$$Prob\ (t) = 1 - (1 - p)\,(1 - q)^{v(t) + r(t)} \tag{40}$$

where $v(t)$ represents the number of neighboring previous adopters with whom the individual maintains contact and $r(t)$ is the number of previous adopters who are weak-tie contacts. The au-

thors argue that a spatial analysis of diffusion data can help in the early prediction of new product success. They state that for a well-received product, word-of-mouth and imitation will feed the flow of internal influence, leading to the formation of clusters. However, if the product is a failure, then internal effects activity will be minimal, diffusion will be mainly due to external effects, and adopters will hence be randomly distributed. Thus, the distribution in the case of a failure would be closer to a uniform distribution. Therefore, the authors argue that it is possible to predict the success of a new product within a few periods of its introduction by comparing the spatial distribution of the product with respect to a uniform distribution using a measure of divergence known as *cross-entropy*. They expect successful products to have a declining cross-entropy measure while failures will have a consistently low cross-entropy measure.

Evaluation

There is a trend in marketing to consider diffusion across both time and space. The use of techniques such as complex systems analysis helps to provide a microview of the patterns of interaction among individuals and an understanding of how this influences the diffusion of new products. However, these models seem to follow the Bass model tradition of viewing new product diffusion entirely through a process of "communication," ignoring alternate explanations such as those described in previous sections.

Modeling Entertainment Products

The sales of entertainment and information products, especially release of movies to theaters, typically follow a pattern of exponential decay rather than the bell-shaped pattern of durable goods sales. A vast stream of marketing research has focused on forecasting sales in the movie industry and sales of other entertainment products. This section reviews some of the important models in this area.

Eliashberg and Sawhney (1994) develop a model to predict individual differences in movie enjoyment. Sawhney and Eliashberg (1996) model the total time to adopt (see) a movie by an individual as the sum of the total time to decide, which is related to information intensity and the total time to act, which is in turn related to distribution intensity. Both these processes are assumed to be exponentially distributed with the stationary parameters λ and γ. The authors find that their model can determine three classes of adoption patterns that can represent all box-office patterns. The authors hence develop a simple model, based on just two parameters, which needs less data than the Bass model to forecast effectively. However, when the authors extend their analysis in an attempt to model with little or no revenue data, they find that while their model does well in predicting the ultimate cumulative box-office potential, it does not help capture the shape parameters λ and γ. Hence there is less insight on how the box-office performance is spread over time.

Subsequent researchers of entertainment products show how to develop better prelaunch forecasts. For instance, Eliashberg et al. (2000) assume that initially all consumers are in an "undecided" state and are exposed to both media advertising and word-of-mouth (positive or negative). Depending on the impact of advertising and word-of-mouth effects, there is a behavioral transition from the "undecided" to the "considerer" (one who eventually sees the movie) or "rejector." The considerer becomes either a positive or a negative spreader. The authors model the state transitions via an interactive Markov chain model. The parameters of the model—word-of-mouth frequency, duration of spread, consideration duration, and distribution delay—are determined via prerelease

experiments. This model is intuitive and appealing as it reflects the actual behavioral states and transitions of a movie consumer.

Elberse and Eliashberg (2003) examine movie forecasting in a cross-cultural context and determine how the performance of a movie in a domestic market influences its performance in a subsequent international launch. Researchers have also examined the impact of advertising (Zufryden, 1996), movie critics (Eliashberg and Shugan, 1997), and movie Web site promotion (Zufryden, 2000) in forecasting box-office performance. Shugan (2000) and Shugan and Swait (n.d.) demonstrate how researchers can utilize consumer intent-to-see measures in developing prerelease forecasts.

A number of other models examine various aspects related to the sales evolution of entertainment products. For instance, Moe and Fader (2002) demonstrate the use of the hierarchical Bayesian technique to develop prelaunch forecasts of new product sales of entertainment goods such as music CDs, based on patterns of advance purchase orders. Lee, Boatwright, and Kamakura (2003) elaborate a hierarchical Bayesian model to develop prelaunch forecasts of recorded music.

Evaluation

These models show in general that alternate models help capture the growth of entertainment products better than the Bass model in terms of insights, fit, and prelaunch predictions of sales. The question is whether these different models are generalizable beyond the specific product modeled to all entertainment products. They are unlikely to be suitable to nonentertainment products. In contrast, the strength of the Bass model is that it can be generalized beyond the durable goods setting.

Modeling the Turning Points in Diffusion

This section examines the definition, measurement, drivers, and models of the specific turning points of the general diffusion curve, that is, takeoff and slowdown.

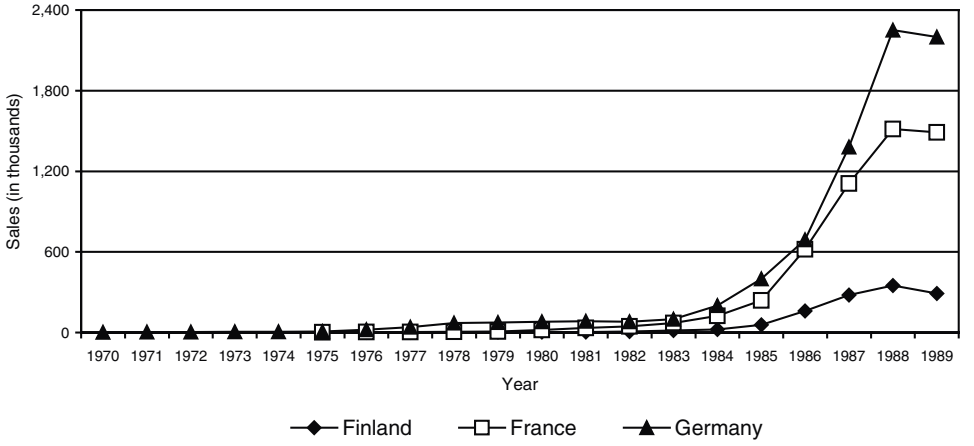
Takeoff

A key characteristic of new products is that not all consumers accept them instantaneously at the time of introduction. The Bass model assumes the presence of a certain number of consumers ($p \cdot m$) before "takeoff" (Golder and Tellis, 1997; Mahajan, Muller, and Bass, 1990, p. 21). Researchers using the Bass model also frequently use data from the point of takeoff or slightly before (Golder and Tellis, 1997). However, most new products experience a long period when sales are low. At some point, a sudden spurt in sales is followed by a period of rapid growth. When viewed graphically, this trend appears as a sharp bend in the curve or a "takeoff." Figure 2.2 compares the takeoff patterns of a white good (microwave oven) across various West European countries. The sharp bend in the curves of the graphs signals takeoff.

Prior to 1997, academic literature and the trade press have often referred to the takeoff of new products without any formal definition or measure of the phenomenon. However, a few articles discuss the phenomenon from select angles.

For instance, Gort and Klepper (1982) define the diffusion of product innovations as the spread in the number of producers engaged in manufacturing a new product. They define the takeoff as the second stage in this evolution, involving a sharp increase or takeoff in the number of *producers.* However, though they are able to demonstrate these distinct stages of market entry, they do

Figure 2.2 **Takeoff of Microwave Oven Sales in Europe**



not relate it to the adoption of the new products by consumers. Thus, we cannot be sure that the takeoff in number of producers coincides with takeoff in sales.

Kohli, Lehmann, and Pae (1999) define a concept termed "incubation time" as the time between the completion of product development and the beginning of substantial sales of the product. They find that the length of the incubation time affects parameters of the Bass diffusion model. The beginning of "substantial sales" of the product can be analogous to takeoff. However, their definition of "substantial" and the measurement of when substantial sales begin, and hence of incubation time, is vague.

Golder and Tellis (1997) define takeoff in sales of a new product as the point of transition from the introduction stage to the growth stage of the product life cycle. They also provide the first formal and precise measure of takeoff. We describe this measure later in the context of other measures for takeoff.

Why is takeoff important? A sudden and sharp increase in sales requires enormous resources in terms of manufacturing, inventory, distribution, and support. Hence, knowing when it occurs and what causes it is critical for managers in handling the sales and success of a new product. Most important, takeoff represents a difficult-to-predict turning point in a new product's life. It might well be a sign to the managers that the product has become desirable to the mass market. It might also be an early sign of the future success of the new product.

Measuring Takeoff

The literature describes many different measures of takeoff.

Golder and Tellis (1997) provide a simple measure for this phenomenon that they find to work quite well in an extensive study of new consumer durables in the United States. The authors find that when the base level of sales is small, a relatively large increase in sales can occur without signaling takeoff. Alternatively, when the base sales are large, a relatively small increase in sales can signal takeoff. Hence, they develop a threshold of takeoff, which is a plot of percentage sales growth relative to a base level of sales, common across all categories. The authors measure takeoff as the first year in which an individual category's growth rate relative to the base sales crosses this threshold. They find that this heuristic measure of takeoff successfully fits a visual inspection for 90 percent of the categories in their sample.

Golder and Tellis (1997) also compare this rule to measure takeoff with two alternatives: a logistic curve rule and a maximum growth rule. The logistic curve rule involves finding the first turning point of a logistic curve fitted to each sales series. This involves determining the maximum of the second derivative of the logistic curve since this captures the largest increase in sales growth. The maximum growth rule uses the largest sales increase within three years of takeoff as determined by the logistic curve rule. However, the authors identify problems with the latter two rules. Researchers can apply the logistic curve rule only in hindsight, as it requires sales beyond takeoff. The logistic curve rule is also a continuous rule to measure what is essentially a discontinuity. The maximum growth rule has three limitations. First, the largest sales growth sometimes occurs after takeoff has already occurred and sales are clearly in the growth stage. Second, large percentage increases can occur even with small base level sales. Third, the researcher can apply this rule only in hindsight.

Agarwal and Bayus (2004, 2002) propose a fourth measure of takeoff. They distinguish between any two consecutive intervals by examining the data on annual percentage change in sales (for the sales takeoff) and annual net entry rates (for firm takeoff) for each product. To determine the takeoff year for a product, first they partition the appropriate series into three categories. Here, the first and third categories contain the years where the percentage change in sales or net entry rate reflect the pre- and post-takeoff periods, respectively. They classify the in-between years based on mean values. This is a method similar to that used by Gort and Klepper (1982) to identify firm takeoff.

Stremersch and Tellis (2004) and Tellis, Stremersch, and Yin (2003) use a fifth measure of takeoff to suit an international sample of countries. It is similar in spirit to the threshold rule proposed by Golder and Tellis (1997). The authors define the threshold as a standard plot of growth in sales for various levels of *market penetration* to provide for a more standard comparison across several countries. Takeoff is the first year in which an individual category's growth rate relative to the base sales crosses this threshold

Garber et al. (2004) and Goldenberg, Libai, and Muller (2001a) use a sixth measure where takeoff occurs when 16 percent of the population adopts. This is similar to Rogers' (1995) argument that the S-shaped curve of diffusion "takes off" at around 10–20 percent adoption.

So far, no study has compared these six different measures of takeoff to assess their simplicity, domain of relevance, validity, and predictive accuracy.

Explaining Takeoff

We consider the literature on takeoff itself to be in the introductory and pretakeoff stage of its life cycle. Our search revealed only a few studies on this topic, three of which deal specifically with the determinants of takeoff. These three studies examine three different drivers of takeoff: affordability, infrastructure, and heterogeneity, and they reach substantially different conclusions.

Golder and Tellis (1997) propose that price declines are a principal driver of takeoff. At some point in the price decline, the new product crosses a critical point of affordability, leading to a takeoff. They find that economic characteristics such as GNP, consumer sentiment, or number of households do not affect the probability of takeoff, arguing that this may be because when the primary condition for takeoff (consumer affordability) is satisfied, even a weak economy cannot forestall takeoff.

Agarwal and Bayus (2002) argue that an increase in firm entry leads to increased consumer awareness due to an increase in the number and quality of product offerings, marketing infrastructural facilities, and promotions. The authors examine both product takeoff and firm takeoff and

find that both firm entry and price declines are related to product takeoff times. Moreover, they find that firm entry dominates price declines in explaining takeoff times.

Tellis, Stremersch, and Yin (2003) examine the relative impact of country, product, and time characteristics on the takeoff of new products across categories and countries. They determine that a "venturesome" culture seems to affect takeoff, and similar to the results in Golder and Tellis (1997), they find that economic wealth and economic progressiveness do not seem to affect takeoff.

Modeling Takeoff

Researchers typically use a hazard function to model takeoff. Both Agarwal and Bayus (2002) and Golder and Tellis (1997) model the rate at which takeoff occurs as a function of a baseline hazard function that captures the effect of time since introduction, and independent variables. Hence, they model time to takeoff using the following proportional hazards specification:

$$h_i(t) = h_0(t)e(z_{it}\beta) \tag{41}$$

where $h_0(t)$ is an unspecified baseline hazard, z_{it} is the vector of independent variables for the ith category and β is the vector of unknown parameters.

The advantage of using this specific formulation is that it does not constrain the baseline hazard to be of any specific functional form, such as monotonically increasing or decreasing. Cox's partial likelihood estimator provides a method for estimating β without requiring estimation of the baseline hazard. Positive beta coefficients increase the hazard of takeoff, negative beta coefficients decrease the hazard of takeoff, and the effect of an increase by one unit of any independent variable on the hazard of takeoff is captured by the magnitude $100 * (e^{\beta} - 1)$. In a similar vein, Tellis, Stremersch, and Yin (2003) use the parametric log-logistic hazard approach to model time to takeoff.

Evaluation

The literature on takeoff is small but critical to managers and researchers for several reasons. First, it identifies an important phenomenon and shows that it can be scientifically modeled. Second, the models are somewhat successful in identifying explanatory variables and predicting the phenomenon. Third, managers have already applied the models in practice and for formulating strategy (e.g., Foster, Golder, and Tellis, 2004).

At the same time, the literature has some important limitations. First, it considers only successful innovations. As such, its implications are good for predicting *when* a takeoff might occur. It cannot tell *whether* a takeoff might occur or predict the success or failure of a new product. Second, the empirical applications of takeoff have involved only a limited geographic domain (only the United States and Western Europe). Third, models of takeoff focus only on the growth of the product until takeoff, which on average occurs at 2 percent penetration of the market. The models give no insights about the sales pattern *after* takeoff. So far, no published study has tried to integrate the modeling of these two phenomena.

Slowdown

The most common conception of a product life cycle portrays the sales history of a product as following a smooth bell-shaped curve, with just four stages—introduction, growth, maturity, and decline. Some researchers have noted, however, that the classic bell shape might not be

Figure 2.3 **Slowdown in Growth of Dishwasher Sales in Europe**

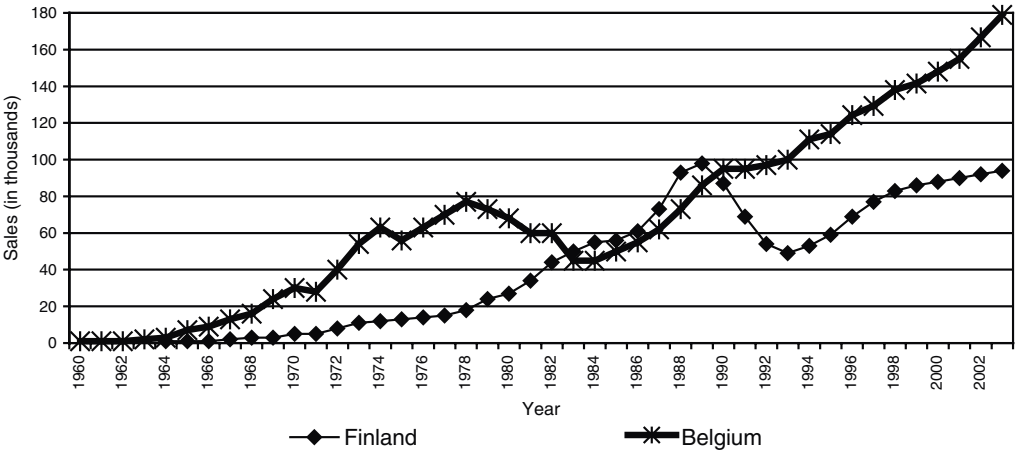
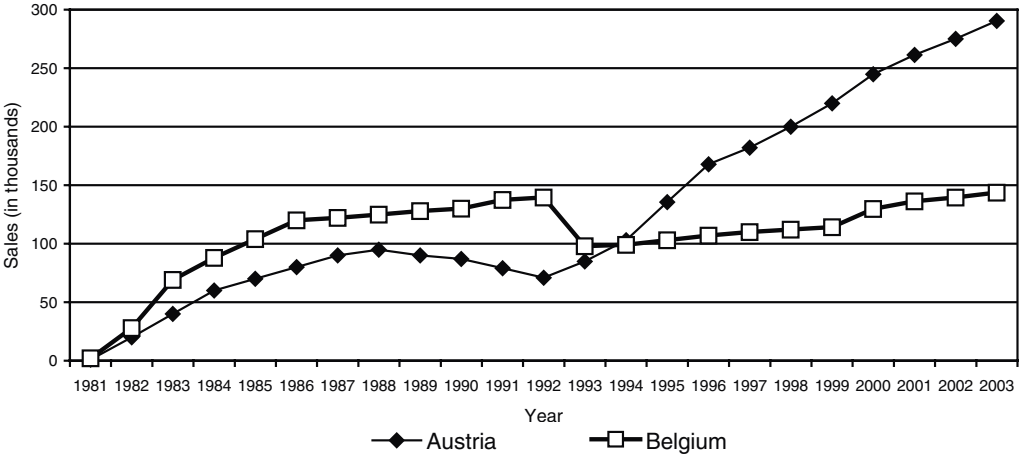


Figure 2.4 **Slowdown in Growth of Computer Sales in Europe**



quite so smooth. Cox (1967) documented evidence for a scalloped product life cycle. Wasson (1978) argued that there is a period of *slowdown* in sales, or "competitive turbulence," which follows the period of rapid growth. In his review of the literature on product life cycles, Day (1981) remarked that while interesting, this pattern had virtually no empirical evidence to support it. Nearly twenty years later, three papers (Goldenberg, Libai, and Muller, 2002; Golder and Tellis, 2004; Stremersch and Tellis, 2004) find empirical evidence of a sudden decline in sales following the growth stage.

As mentioned earlier, Golder and Tellis (2004) define *slowdown* to be the point of transition from the growth stage to the maturity stage of the product life cycle. Hence, *early maturity* begins with the year sales slow down and continues until sales grow to the previous local peak. This is similar in spirit to the concept of the "saddle" proposed by Goldenberg, Libai, and Muller (2002).

Figure 2.3 shows the typical pattern of a slowdown in sales in the case of dishwashers in Europe. After takeoff, the sales of the products reach an initial peak, followed by a sharp and deep

decline, and seem to take some time before regaining the initial peak. Figure 2.4 shows similar patterns for the newer electronic goods category of computers.

Measuring Slowdown

Early maturity begins with the year sales slow down and continues until sales grow to the previous local peak (Golder and Tellis, 2004).

Late maturity begins with the first year sales being higher than the local peak and continues until a product's sales begin to fall steadily during the decline stage (Golder and Tellis, 2004).

Goldenberg, Libai, and Muller (2002) define and measure the saddle as a trough following an initial peak in sales, reaching a depth of at least 20 percent of the peak, lasting at least two years, followed by sales that ultimately exceed the initial peak. Golder and Tellis (2004) and Stremersch and Tellis (2004) operationalize slowdown, or the end of growth, as the first year, of two consecutive years after takeoff, in which sales are lower than the highest previous sales.

Explaining Slowdown

What are the reasons for the sudden decline in sales following slowdown? Recent literature in marketing proposes three key reasons for what may be the main processes driving slowdown of new products: dual-market phenomenon, informational cascades, and affordability.

Dual Market Phenomenon. Goldenberg, Libai, and Muller (2002) argue that the initial product offered to consumers is different from that offered in a later phase, and the consumers in two stages of the product life cycle differ in a meaningful way. Hence, the early market and the late market adopt in different ways, and the social contagion process is *broken* at the point of transition from the early market to the late market. Both demand-side and supply-side factors seem to be at work here.

This theory builds on work by Moore (1991), who argues that a *chasm* exists between the early adopters and early majority. He posits that in the case of technological products, early adopters are looking to buy a change agent and expect to get a jump on competition. They expect some radical discontinuity between the old and new ways and are prepared to champion the cause. The early majority, on the other hand, wants to buy a product improvement for existing operations. They are looking to minimize discontinuity with old ways and want technology that enhances, not overthrows. established ways of doing business. This lack of communication between the two segments can create a difference in the adoption rates of both segments, leading to the slowdown in sales.

Informational Cascades. Golder and Tellis (2004) posit an alternative explanation based on the theory of informational cascades (Bikchandani, Hirshleifer, and Welch, 1992). Cascades occur when many consumers base their choice on the behavior of a few other consumers rather than on their own private assessments of the utility of alternatives. Some consumers first decide to buy a new product on its merits. A few other consumers note their behavior and follow suit, causing an increase in sales. The increase triggers still more consumers to buy the new products, leading to much bigger increases. The process cascades into the takeoff and rapid growth of the new product. Due to the cascade during the growth stage, sales increase far more than they would have based on consumers' private assessment of the utility of the new product to them.

Such cascades are fragile. Some small doubt or turbulence in the market can cause a slowdown in sales and hence trigger a negative cascade. Such behavior can account for the common drop in sales of a new product after slowdown, and the pickup of sales after the turbulence.

Affordability. Golder and Tellis (2004) posit a third explanation for slowdown based on the notion of affordability. A decline in national income or an economic contraction can trigger a corresponding decline in the disposable income of consumers. As a result, consumers cut down on discretionary expenditures, such as purchases of new products, which have typically not yet become essential (Deleersnyder et al., 2004). If the economic decline is substantial, it can lead to the slowdown and even subsequent drop in sales that we observe at the end of the growth stage of a new product life cycle.

Modeling Slowdown

The two studies of slowdown offer conflicting explanations of what determines slowdown, and they use different models to test their hypotheses.

Goldenberg, Libai, and Muller (2002) use *cellular automata* to describe the process by which internal communication breaks down between the early adopters and early majority. As mentioned earlier in the review, cellular automata models are simulations that reveal aggregate patterns based on local interactions between cells. This technique has three benefits. First, researchers often find it difficult to obtain data at the individual level. Second, aggregate level models sometimes do not provide insight about individual level phenomena. Third, there is the persistent difficulty of determining how aggregate phenomena evolve from changes in individual actions. The use of cellular automata helps to circumvent this problem. These models can help validate the assumptions made in aggregate level models (Goldenberg, Libai, and Muller, 2001a, 2001b). However, the cellular automata models consider adoptions only in a binary state (0 or 1). There do not seem to be ways of obtaining socioeconomic characteristics of these adopters or any such information that aids the modeling of diffusion processes.

Golder and Tellis (2004) use hazard modeling to determine the impact of explanatory variables such as price declines, income declines, and market penetration on the time to slowdown. They find that every 1 percent decrease in total GNP is associated with a 17 percent increase in the probability of slowdown, indicating that economic factors affect slowdown in a substantial manner (though Golder and Tellis [1997] find no effect of economics on takeoff). In addition, they find that categories with large sales increases at takeoff will also have large sales declines at slowdown, giving some support to the notion of informational cascades. They find that every 1 percent higher price is associated with a 4.7 percent increase in the probability of slowdown, indicating that price declines can extend the duration of the growth stage. They also find that every 1 percent increase in penetration is associated with a 3.6 percent increase in the probability of slowdown, indicating that the probability of slowdown increases with a depleting pool of adopters.

Support for economic variables leading to a slowdown in sales is also found to some extent in Deleersnyder et al. (2004). These authors find that consumer durables are highly sensitive to business-cycle fluctuations. In addition, they find that every percentage decrease in the cyclical component of GNP translates to a drop in the cyclical component of durable sales by, on average, more than 2 percent.

Evaluation

Research on the slowdown in new product growth is new. There is still no consensus on whether and to what extent the phenomenon is pervasive, how to define and model it, and what factors drive it. If the pattern proves to be regular, it represents a challenge for research to model it and integrate it within any of the prior models. New research in this area can also make a substantive

contribution by developing one integrated model to investigate the impact of the different drivers of slowdown.

Conclusion

This comprehensive review of the marketing literature on the diffusion of new products provides the following benefits to the reader. First, the review delineates key phenomena associated with the diffusion of innovations such as the shape, turning points, and stages of diffusion. Second, the review identifies the variety of drivers of diffusion and explains how they have been either modeled or ignored in various research traditions. Third, the review provides a critical evaluation of the models. This evaluation give readers a simple synopsis of the models with their strengths and weaknesses. Fourth, the review identifies a large number of regularities or potential generalizations in the areas of shape of the diffusion curve, the turning points, and the early stages of the new product's life cycle.

While extensive, the review is still incomplete in one important respect. It does not cover the literature in many related fields such as medicine, agriculture, sociology, anthropology, and technology management. It also covers only very limited aspects of the economics and geography literatures. While we believe that the models, drivers, and potential generalizations identified in marketing can be extended to these other fields, this is a topic for further research.

Notes

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1. New product growth can follow alternate growth patterns. A shape of growth that has not been captured by the logistic or the exponential growth curves is seen when the period of rapidly increasing sales is shorter than the period in which sales converge to a certain saturation level. Frances (1994), in an illustration of the Dutch new car market, and Chow (1967), in the rental of electronic computers in the United States, capture these growth processes using a Gompertz curve. Bemmaor (1994) develops a gamma/shifted Gompertz model, which will be discussed later in this chapter.

2. Urban, Weinberg, and Hauser (1996) suggest a technique known as "information acceleration" to forecast consumer reactions to radically new products such as electric vehicles. Here, researchers utilize a multimedia computer to create a virtual buying environment and accelerate information to a consumer so that he/she can react as if they were in the future. The authors develop market forecasts using combinations of stated intent measures, conjoint analysis, and diffusion models. See Urban et al. (1997) for further applications of this technique.

3. See Morrill, Gaile, and Thrall (1988) for a review of more recent approaches to model spatial diffusion, in the geography literature tradition, examining both spatial diffusion and the incorporation of time and space in diffusion.

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Chapter 3

ON THE DISTINCTION BETWEEN CULTURAL AND CROSS-CULTURAL PSYCHOLOGICAL APPROACHES AND ITS SIGNIFICANCE FOR CONSUMER PSYCHOLOGY

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Abstract

Cultural and cross-cultural psychological methods are reviewed and compared and contrasted with each other. Underlying conceptions of culture that underpin both are presented, as are varying methods associated with each approach. The consumer research questions that are best answered using each approach are identified. How each approach informs the other is discussed, as are the deficiencies of each approach. Finally, how consumer research can benefit from understanding the differences in the two approaches is examined.

Marketing is becoming more and more global every day, and understanding consumer behavior in all of its cultural complexity is becoming a necessity for most firms. Consumer research can no longer afford to base its theories on economic and psychological assumptions that are applicable only to North American or European contexts. Recognizing this, many consumer researchers have begun investigating consumers in a variety of locales, with a primary goal of ascertaining whether models that have a strong tradition within the consumer behavior field are able to explain and/or predict behaviors in cultural contexts other than the one in which they were developed. Researchers have addressed the cross-cultural applicability of models dealing with constructs such as persuasion, cognition, emotion, memory, attitudes, and decision making (for a review, see Maheswaran and Shavitt, 2000).

Most academic consumer research to date has taken the perspective of cross-cultural psychology. Consumers from various geographical backgrounds or cognitive proclivities based on culture are compared on a construct of interest. The cross-cultural approach represents an important step in establishing the universality of consumer behavior theories in various contexts. Douglas and Craig (1997) point out though that cultures are evolving and globalizing, and thus consumer research that fails to account for this dynamism is "doomed to invalid inferences and partial conclusions" (p. 393). They argue that consumer research must develop new paradigms that "encompass the complex collage of constantly changing cultural influences" (p. 393). *Cultural psychology* has been developed in response to this type of concern, and is gaining currency in many social science fields such as sociology, anthropology, and especially cognitive and social psychology. While not well represented within consumer psychology to date, cultural psychology can provide a per-

spective from which to investigate consumer psychology that accommodates the dynamic view of culture that is emerging in the literature. In some key epistemological areas, this approach is similar to yet different from the dynamic constructivist view, which also advocates a dynamic view of culture, and was recently introduced in cross-cultural consumer psychology (e.g., Briley, Morris, and Simonson, 2000).

Both cross-cultural and cultural research can benefit from this dynamic conceptualization of culture. Our purpose here is to clarify the distinction between cross-cultural and cultural research approaches by outlining their respective epistemological underpinnings, demonstrating the different insights that can be brought to consumer research from each approach, describing the methodologies associated with each approach, and suggesting when a cultural or a cross-cultural approach would be most appropriate to use. Our goal is to stimulate consumer psychologists interested in cultural issues to ask themselves, before embarking on a research program, whether a cultural or cross-cultural approach would yield the insights they are seeking, and to make epistomological assumptions about culture as embodied in cross-cultural and cultural approaches more explicit than they have been within the consumer psychology literature.

On the Distinction Between Cross-Cultural and Cultural Approaches

The Meaning of Culture

It is important to clarify the meaning of culture that we use to guide our thinking. The meaning of culture is among the most debated questions in social science today, especially with the advent of postmodernism into the academy. For our purposes, culture is viewed as "an historically transmitted pattern of meanings embodied in symbols" (Geertz, 1973, p. 89). From this perspective, culture is seen as a symbolic system embodied in artifacts and practices (Miller, 1997). Culture is the patterns of thinking, feeling, and acting common to a particular group of people. Culture is learned, and is derived from one's social environment. "To construct their lives and themselves so as to communicate and coordinate with each other, people must use community practices, institutions, relationships, technologies, standards, goals, meanings, and definitions of social agents. Taken together, this is culture," (Fiske et al., 1998, p. 922). Culture is inherently social, or public. It develops as people interact with each other, and is upheld through public institutions and personal interactions with others.

In agreement with Markus, Kitayama, and Heiman (1996), culture is conceptualized in this chapter as meaning-making. This entails dissolving the person/environment, self/society, and individual/collective distinctions (Shweder and Sullivan, 1993), and instead focusing on how and whether individuals assign meanings to such phenomena as self, family, mind, emotion, the future, evil, or morality. People who share meaning systems for constructs such as the above can be said to share cultural understanding. Finally, culture is viewed as an organization of diversity (a distribution of public and private meanings) rather than as a uniform entity (Markus, Kitayama, and Heiman, 1996). For people to be said to share a culture, there must be significant overlap in terms of both meaning and practice. Essentially, culture is viewed as shared meaning systems (evident in daily practices), as both internal and external to the individual, and as dynamic rather than static.

One thing that culture is not is group membership (Adams and Markus, 2004). That is, culture is not a proxy for nation or society. Such a view of culture has been prominent within social psychology, however, and also can be found within consumer psychology. Some of the consequences of equating culture with group membership are stereotyping, homogenizing, essentializing, and reifying (Adams and Markus, 2004). Thinking of cultural groupings as rigid, homogenous groups

of people negates the dynamic nature of culture, and treats cultural group categories as inevitable rather than as a distribution. Viewing culture as explicit and implicit patterns of ideas and behaviors, as advocated here, helps to make it clear that culture does not reside in group membership (Adams and Markus, 2004).

Nature of the Cross-Cultural Approach

Cross-cultural consumer research stems from cross-cultural psychology, which first appeared in 1954 (with the attempted replication of opinion in a small group in seven European countries [Schachter et al., 1954]), but did not gain prominence until the early 1990s, with the advent of diversity initiatives and globalization (Bond, 1998). In consumer research, cross-cultural work first appeared in 1970 (with a comparison of U.S. and Japanese attitudes toward foreign products [Nagashima, 1970]), and gained prominence in the field in the mid-1990s, as global imperatives in marketing became the norm in the business world. The underlying purpose of cross-cultural approaches is to determine whether theories and constructs developed in a North American and West European context apply to people with different cultural orientations. The search is for similarities as well as differences in both behavior and psychological processes. Cross-cultural research studies the boundary conditions for generalizations typically created in the West that are presumed to be universal (Shweder, 2003). Cross-cultural research typically takes a social psychological approach, in that a standard experimental design or set of measures is developed for all participants who alternate on some variable of interest, such as self-construal. Results are compared between the groups, and conclusions about the similarity or difference of psychological processes are made based on the results. The approach is an etic one, in that the theory that explains behavior typically comes from the researcher rather than the participants, and usually, for at least one group of participants, was developed in a different cultural setting than their own. According to Van Herk, Poortinga, and Verhallen (2005), about 80 percent of research that examines more than one culture uses this type of etic approach, and less than 15 percent includes emic, or culture-specific, elements.

In essence, cross-cultural research conceptualizes culture as a variable that is external to the individual, something that can be held constant and controlled for when conducting experiments —culture as an independent variable model. In fact, some cross-cultural researchers attempt to prime variations in cultural orientation (i.e., Hong et al., 2000). The same assumption that is implicit in most social and cognitive psychology is also assumed in cross-cultural research: that the process and content of the mind can be separated. The ultimate goal for many cross-cultural researchers, as exemplified by Baumeister (2005), is to find universal theories of behavior, and finding the boundary conditions for prominent theories in the literature typically developed in North America or Western Europe is thought to be the best way of achieving this goal. The North American/Western European way of thinking and acting is considered to be the "universal" way, and it is used as the default point for explanations of behavior in most cultural contexts. Indeed, Sedikides, Gaertner, and Toguchi (2003) describe between-culture differences as resulting from "distinct cultural influences working through common psychological pathways" (p. 73). Their assumption is that the psychological pathways that have been identified in the literature to date are the universal ones, and the challenge for researchers is to liberate individuals from their contextual constraints by putting them in the laboratory and allowing the universal nature of psychology to reveal itself. Within consumer research, this view of culture as external to the individual and used primarily as an independent variable has been referred to as an essentialist view of culture (Askegaard and Kjeldgaard, 2002).

The cross-cultural approach marks an important first step toward the realization by researchers that many of the results reported in the literature and previously taken to be universals are culturally bound, and that many constructs have boundary conditions around them where none were thought to exist before. As Miller and Schaberg (2002) note, "Research in cross-cultural psychology shares many of the conceptual presuppositions of mainstream psychology—which explains, at least in part, why it has not fundamentally posed a challenge to the mainstream discipline" (p. 35). These authors argue that the cross-cultural approach is both groundbreaking and limited in its capacity to challenge the core theoretical assumptions of the discipline. For example, work utilizing a cross-cultural approach, "was concerned with developing parameters that affected the level of development of particular psychological attributes, but not the nature of the attributes themselves" (p. 40). As we begin to understand more and more about cultural effects on consumer phenomena, in many situations it may not be appropriate to use this approach. Some critiques of the cross-cultural approach are given below.

Issues and Problems in the Cross-Cultural Consumer Behavior Literature

Most cross-cultural studies in both psychology and consumer research compare populations on a construct of interest using universalist dimensions of culture such as Hofstede's (2001) five cultural dimensions. Some of the main arguments as to why it is inappropriate to construe culture using abstract cultural factors like Hofstede's dimensions of individualism and collectivism, power distance, uncertainty avoidance, and so on, are summarized in Ratner and Hui (2003). Miller and Schaberg (2002) note, for example, that much work using individualism and collectivism fails to account for subtleties in cultural meanings and practices, and portrays the two cultural systems in a stereotypical way. One of the more important criticisms of the cross-cultural approach is that many researchers using dimensions such as Hofstede's (2001) individualism and collectivism to explain differences between respondents living in various countries have assumed that there is only one definition of what being collectivist, for example, means. In fact, Triandis (2001) outlines over sixty ways in which people categorized as collectivist can differ. Collectivism takes a very different form in South America, for example, than it does in East Asia. Green, Deschamps, and Paez (2005) demonstrate four different types of individualism and collectivism, which vary greatly both within and among the twenty countries that they examine. They show that competitiveness is associated with both individualism and collectivism (previously thought to be associated with individualism only), as competitiveness can be motivated by both individual and collective concerns. In addition, even in the homogeneous sample of students that they use, strong within-country variation exists in every country studied. As these authors argue, individualism and collectivism have been treated as dimensions, whereas they should be treated with a typological approach, which allows researchers to study patterns of coexistence of individualism and collectivism.

To date, within consumer research, meaningful efforts to study consumer behavior that have utilized a Hofstede-type cross-cultural approach have come from Aaker and her colleagues (e.g., Aaker and Mahaswaran, 1997; Aaker and Williams, 1998). An examination of two articles that are representative of how the cross-cultural approach has been implemented within consumer research serves to illustrate some of the commonly found issues in taking this approach to explain consumer psychology.

Aaker and Williams (1998) investigate how other-focused versus ego-focused appeals lead to favorable or unfavorable attitudes for members of collectivist (Chinese) and individualist (U.S.) societies. Chinese and American respondents read print advertisements for a fictitious beer, in which the appeal either evokes pride (ego-focused) or empathy (other-focused). Respondents then indicate

their favorable or unfavorable attitude (on a continuum) toward the advertisement. It is expected that the Chinese respondents will evaluate the other-focused ads more favorably, as collectivist cultures emphasize other-focused behavior. Surprisingly, the American respondents report more favorable attitudes toward the other-focused advertisements and the Chinese respondents report more favorable attitudes toward the ego-focused advertisements. The authors speculate that these unexpected findings are due to novelty effects—the Chinese are not used to seeing ego-focused advertisements, and thus the novelty increased the favorableness of reactions to these advertisements, and vice-versa.

However, the past research they use to support this explanation, such as that novelty increases elaboration (MacInnis, Moorman, and Jaworski, 1991), which in turn increases the favorableness of an attitude (Petty and Cacioppo, 1979), has not been empirically verified for Chinese respondents. There are no empirical data demonstrating that Chinese consumers would respond favorably to novel stimuli over other-focused stimuli. However, as advertising appeals would be much more situational for those in a collectivist society, in the case of beer-drinking, ego-focused appeals may be more appropriate. Indeed, when the authors later test their novel-stimuli theory, they do not find convincing support for it. They acknowledge that "the same emotion may become ego-focused versus other focused merely by switching the focus of attention, framing or context in which the emotion is described" (p. 33). What is an ego-focused appeal in an individualist culture may not necessarily be so in a collectivist culture, and the concept of an ego-based appeal (as individualists see it) may not even be psychologically relevant to people in a collectivist culture.

Gregory and Munch (1996) have noted that individualism and collectivism as cultural categories are insufficient to explain consumer behavior at an individual level because sometimes people in a collectivist society act in accordance with individual goals if these are in congruence with in-group goals and vice versa (people in an individualist society can act collectively if it serves their individual goals). For instance, an ad that promotes individualistic values, such as the beer ad used in Aaker and Williams (1998), may be effective in a collectivist society if the individualistic values can serve the goals of the in-group in a particular consumption situation.

Moreover, Singelis (2000) would argue that the authors have engaged in what he calls an ecological fallacy, which occurs when society-level variables are used to predict or explain individual behavior. As Chirkov and colleagues (2003) explain, "one cannot presume that a person truly endorses cultural practices or values just because he or she is surrounded by them or because he or she resides in a given country" (p. 106). One of the simplest ways to combat this is to simply measure cultural orientation. The same authors, for example, found that their American, Korean, Russian, and Turkish respondents varied considerably both between and within countries on various aspects of individualism and collectivism, in ways similar to those that would be predicted by scholars such as Hofstede (2001), as well as in ways that go against the common assumptions about the distribution of individualism and collectivism.

The above Aaker and Williams (1998) study also highlights the point that constructs and psychological perceptions can be inherently, qualitatively different in various populations, and how difficult and potentially misleading it can be to compare responses to the same stimuli without first establishing meaning equivalence. It also illustrates that using essentialist categories such as individualism and collectivism can be inappropriate in consumer research when investigating psychological processes without having an understanding of the particular cultural nuances of the people under study, and without teasing out the particular nuances of individualism and collectivism that are important in explaining the phenomenon under study. Issues similar to these were recently raised in a special issue of the *Journal of Cross-Cultural Psychology* (see Singelis [2000] for a summary of some of the most important concerns raised there), and a special issue of *Social Cognition* (see Hong and Chiu [2001] for a summary).

In another intriguing study, Aaker and Maheswaran (1997) investigate the applicability to individuals in the collectivist culture of Hong Kong of the two most widely used dual-process models, which have been proven to be very robust in studies conducted with Western respondents: the elaboration likelihood model (Petty and Cacioppo, 1979) and the heuristic systematic model (Chaiken, 1980). Aaker and Maheswaran (1997) report that, consistent with the large body of work done on dual-processing models with Western subjects, subjects in collectivist societies used the same central and peripheral processing strategies in the appropriate motivation conditions. The cultural robustness of these models is argued based on this finding. Additionally, in a second experiment, they found that the number of attributes presented (a heuristic) was used only in the high motivation condition for both the Hong Kong and American respondents, again duplicating the robust findings from North American/West European research.

While the authors lament that the common conclusion in cultural psychology—that it is inappropriate to apply previously developed theoretical frameworks in different cultures—is overstated, and use their findings to dispute this conclusion, a few aspects of their study weaken this position. First, their collectivist sample consisted solely of people born and raised in Hong Kong, which has been under tremendous English influence for the past 100 years. Assuming that modern Hong Kong residents are collectivist is inappropriate, as prior research has shown Hong Kong residents to be Westernized in many respects involving their self-concept (Bond and Cheung, 1981; Triandis, Leung, and Hui, 1990).

Second, constructs, methods, and problem-solving mechanisms developed in a fairly unique culture (the United States) were used to try to capture a cultural difference that may not necessarily parallel indigenous psychologies in other parts of the world. In other words, culture may have been construed as an independent variable (as in a cross-cultural approach) when it was not appropriate to do so. Fiske (1991) argues that it is inappropriate to construe culture as an independent variable to investigate psychological *processes* because culture is "socially transmitted meta-schemas mediating human thinking, communication, and social psychological processes . . . [C]ulture is not something you can 'hold constant' or 'control for' while you investigate psychological phenomena, because culture is the medium in which psychological and social relations operate. *Ceteris* are never *paribus.* So culture is not just another 'variable'" (p. 1).

There is also a stream of research within the cross-cultural approach that focuses on the nature of the self rather than on society-level variables such as individualism and collectivism. Some researchers investigate differences in the self, for example, with the interdependent and independent selves (Markus and Kitayama, 1991) being the most common construal. While there are more people with interdependent self-construals in countries categorized as collectivist and the opposite with respect to independent selves and individualist cultures, there is still a mix of self-construals within every country. That is, even though the United States scores very high on individualism, a certain percentage of the population will still have interdependent self-construals. Thus, when using a self-construal conceptualization, researchers operationalize self-construal either through measurement or priming rather than assuming it, and it is possible to conduct "cross-cultural" research within one country alone.

The same is true for variations within cognitive processing styles. Nisbett and colleagues (2001) introduce the idea that some people have holistic and others have analytic processing styles. While the authors link these cognitive processing styles to East Asia (holistic) and the West (analytic), it is possible to have people with both styles within any given country. Research that primes self-construal leads to the observation that it is the nature of the self-orientation that accounts for differences in processing styles, and, by inference, that psychological processes vary across cultures. It is this type of research that, although in the cross-cultural tradition, offers a bridge between comparative research and research based on the principles of cultural psychology.

Nature of Cultural Psychology

In addition to the cross-cultural approach, a relatively new discipline has been emerging in the social sciences. Incorporating elements of anthropology, sociology, and social psychology that specifically address the influence of culture on behavior, the discipline is called "cultural psychology" (Miller 1997). Cultural psychology views culture and psychological processes as phenomena that cannot be understood in isolation from one another. Miller (1997) explains, "psychological processes and structures are seen as patterned, in part, by cultural meanings and practices, [and] these psychological structures and processes may vary fundamentally in different cultural contexts" (p. 87). In cultural psychology, if culture and psychological processes as well as behavior are seen as phenomena that cannot be understood in isolation from one another, then we should not study culture as an independent variable that affects the dependent variable of individual behavior (Eckensberger, 1990). Instead, one must have an informed understanding of a person's culture to begin to understand the nuances of human action (Geertz, 1973), and that human behavior and its causes might be inherently uncomparable across cultures. As Ross (2004) argues, when culture is construed as an independent variable, "results are at best misleading" (p. 3).

Cultural psychology seeks to understand people's cognitive, emotional, motivational, and behavioral processes as they are shaped through interaction in a cultural world (Fiske et al., 1998). Cultural psychology recognizes that people plan, think, and feel with reference to local practices, relationships, institutions, and artifacts. To do this, people must use their local cultural models, which consequently become an integral part of their psychology. "The psyche, then, is not a separate, autonomous set of processes; instead, it exists and functions only in close conjunction with the culture" (Fiske et al., 1998, p. 922). Cultural psychology rejects the notion common in social psychology that the processes and cultural content of the mind can be separated, positing instead that psychological processes are the result of engagement in a given cultural context and hence inseparable from that context.

Cultural psychology can be said to have grown out of, yet be very theoretically distinct from, cross-cultural psychology. While cross-cultural psychology conceptualizes culture and psychological phenomena as discrete phenomena, and seeks to contrast varied cultures against one another on similar dimensions, cultural psychology views culture and psychology as mutually constitutive phenomena, and assumes that culture and individual behavior cannot be understood in isolation and yet are also not reducible to one another (Miller, 1997). In this view, psychological phenomena are cultural in their essence (Ratner, 1999). This includes cognitions and emotions.

In essence, cultural psychology seeks to understand people from their own lived experience, or in an "experience-near" fashion (Shweder and Sullivan, 1993). This stems from the belief that the cultural essence of psychological phenomena consists in practical social activities (Ratner, 1999). This typically leads to a rejection of the notion that the psychological processes chronicled in decades of studies conducted with North American and West European, mostly Caucasian, subjects are universal, and instead advocates relativistic views with reference to psychological diversity. This is not to say that cultural psychology rejects all forms of universality, but that the degree of universality is usually more abstract. For instance, the idea that everyone has some sort of notion of themselves as a "self" is probably universal (Geertz, 1984), but not necessarily the notion of self as a bounded, unique center of awareness that is widely reported in North America and Western Europe. Shweder and Sullivan (1993) call this "universalism without the uniformity."

A hallmark of cultural psychology is its interdisciplinary nature. Cultural psychology draws from social and cognitive psychology as well as anthropology and sociology. Theoretical and methodological heterogeneity are the norm. As Miller (1997) writes, "Such heterogeneity not

only represents a strength of cultural approaches to psychology but constitutes a feature that is required to provide answers to the complex problems motivating work in this field" (p. 118). As most consumer behavior researchers are trained in social psychological experimental methods, this heterogeneity can also partially explain why there have been so few examples of cultural-psychological studies in the literature to date. Miller and Schaberg (2002) argue that social psychologists privilege laboratory-based methods and are dismissive of the qualitative methods that are frequently involved in cultural inquiries, as they are seen as having limited reliability and validity. This is also true for many consumer psychologists.

Cultural psychology investigates the processes of psychological mechanisms in their cultural context, the interaction between culture and the local meaning of a variety of psychological constructs, and how cultural constructs affect psychological phenomena. Within consumer psychology, it would be appropriate to investigate topics of interest such as advertising interpretation, brand-meaning creation, the organization of knowledge, and other issues suggested by cultural differences in psychological processes.

In sum, within consumer psychology, the focus of "cultural" research has not typically been culture. Rather, the focus is on whether important consumer behavior constructs such as loyalty, advertising perception, possession meaning, diffusion of innovation, and so forth vary across cultures. Cultural psychology suggests that to move the field of consumer psychology forward, it must be recognized that all behavior is essentially cultural, that the level of universality of consumer psychology constructs may be higher than previously acknowledged in the literature, and that the study of how consumer psychology affects culture is just as important as the study of how culture affects consumer psychology.

In the special issue of the *Journal of Cross-Cultural Psychology* devoted to the questions surrounding the proper way to compare constructs and how to construe culture in relation to psychological phenomena, Kim, Park, and Park (2000) advocate "indigenization from within," which occurs when psychological theories, concepts, and methods are developed from an emic approach. The authors argue that science will get closer to its goal of universal theories if some of its constructs come from non-Western sources, and are then "tested" to see whether they are relevant in Western contexts rather than always the reverse. It is becoming increasingly difficult to continue to construe global consumer behavior phenomena from a Western perspective only, and marketers need to find alternate ways of understanding reactions to marketing messages in a wide variety of cultures. Cultural psychology can provide the rigorous theoretical platform needed to undertake this task in a meaningful manner.

Using a cultural-psychological approach will add significantly to the consumer psychology literature by complementing the cross-cultural work that is already being done, bringing the consumer psychology discipline up to date with other social science disciplines with respect to how culture is construed, and, most important, providing concrete epistemological and methodological grounding to accommodate the emerging dynamic view of culture in the literature.

Methodological Approaches Associated with Cultural Psychology

Cultural psychology advocates using methods that relate to understanding the meaning of various psychological phenomena in a culture on its own terms rather than methods that compare phenomena across cultures, as are used in cross-cultural psychology, although comparisons can be appropriate once meaning equivalence has been established. As Shweder and Sullivan (1993) observe, cultural psychology is the study of experience-near concepts, and experience-near concepts are the only correct units of analysis for studies in cultural psychology. In fact, Fiske and

colleagues (1998) argue that experiments designed to reproduce in the lab practices that make sense in a Western cultural context can either make no sense or have a completely different, unintended meaning in other cultural contexts. They suggest that, "In order to understand the meanings, practices and institutions which shape and are shaped by psyches, we need to analyze and compare cultures in depth. Extended participant observation . . . is an important precursor and complement to experimentation" (pp. 145–146).

Characteristic methods of cultural psychology are ethnographic techniques, depth interviewing along with phenomenological analysis of the interviews, traditional experimental methodologies in conjunction with ethnographic techniques, and cross-cultural comparative methodologies (Miller, 1994). There are no bounded sets of methodologies and there is no one type of strategy (i.e., interpretive vs. quantitative; naturalistic vs. experimental) associated exclusively with cultural psychology. As Ratner (1997) puts it, cultural psychology methodology, "does not simply investigate psychological phenomena in different cultures; the goal is to comprehend culture in psychological phenomena." (p. 123). Cultural psychology methodology can begin with either a cultural activity and ascertain the psychological phenomenon associated with it (i.e., the psychology of the Buddhist religion) or with a psychological phenomenon and ascertain the cultural activities associated with it (i.e., possession meaning and how culture interacts with it). Researchers cannot assume that an individual knows the cultural character of his or her actions or aspects of his/her psychology (Ratner, 1997).

From this we can conclude that researchers must go beyond what people say—that is, beyond self-reports—to complete a proper cultural analysis of any phenomenon. Indeed, Peng, Nisbett, and Wong (1997) explicitly pitted self-report methods against scenario methods in their investigation of values in the United States and China, and found that the contextual scenario method yielded the most valid results. The contextual scenario method has also been used to investigate cultural differences in emotions (Wong and Bagozzi, 2005). In addition to contextual methods as an alternative to self-reports, Kitayama and colleagues (2003) use an implicit measure called the "framed-line test," in which Japanese and American participants, in both Japan and America, had to draw a line proportionately or identically within a square to investigate the influence of culture on accuracy in perception and contextual effects. Using an implicit measure allowed the researchers to demonstrate how contextual effects influenced accuracy in varying cultural contexts in a way that could not be revealed via self-report methods, and testing the respondents in both the home culture and a host culture also allowed the authors to tease out culture of origin versus host culture effects.

The methodology used in cultural psychology can be different from the qualitative methodology commonly seen in consumer research. As Ratner (1997) points out, "Qualitative methodologists have traditionally focused on personal experience. They have neglected its cultural organization" (p. 129). Phenomenologists and symbolic interactionists reject the inherent tie between culture and behavior/psychological phenomena, as do structuralists, rendering their methodologies inappropriate for cultural psychology. Hermeneutics (Arnold and Fischer, 1994; Thompson, 1997) is one commonly used consumer behavior methodology that can be incorporated in cultural-psychological methods nonproblematically, in that it emphasizes the cultural formation of experience. Similarly, dialectics is also an appropriate methodology to use in taking a cultural-psychological approach. See Table 3.1 for a listing of specific methodologies that are especially appropriate for the investigation of culture and psychological phenomena. Which particular methods are appropriate for a given research program will be dependent on the research phenomenon of interest. As triangulation of data is an important theme within the cultural approach, using more than one of these methods in a specific research program is the ideal.

Table 3.1

Recommended Methodological Approaches When Utilizing Cultural Psychology in Consumer Research

1. Interpreting statements (phenomenology), preferably with a hermeneutic analysis
2. Comparing diverse modes of responding (self-reports must be supplemented by observation of behavior)
3. Identifying situations in which the phenomenon does and does not occur (recognizing and seeking out a range of conditions)
4. Developing social relationships with subjects that are conducive to psychological expression (establish trust and a nondominant position, as it is appropriate for gaining relevant information)
5. Ascertaining the cultural quality of the psychological phenomenon through its interrelationships with other phenomena (be holistic rather than particularistic)
6. Using qualitative methodology before quantifying psychological phenomena (quantification is only meaningful if qualitative methodology has first been used to identify the *nature* of psychological phenomena)
7. Employing the foregoing principles in concert

Source: Adapted from Ratner (1997).

When taking a cultural-psychological approach, the more the researcher can share the perspective of the subject, the more valid the data will be (Greenfield, 1998). This is almost the opposite of conventional wisdom within cross-cultural psychology, where the most valid perspective is an objective one. A researcher gains the perspective of subjects by interacting with them naturally, in the field. A full ethnography is not necessarily needed for cultural-psychological research (Greenfield, 1998). What is needed is firsthand experience of the settings in which the human activity of research occurs, which can include some participant observation, open-ended conversations, or interviews. Unstructured focus groups can also provide this firsthand experience. These experience-near findings must be integrated with findings from other methods. "Researchers must learn through interacting with subjects and observing their activities which relationships and community institutions are relevant to the focal subject" (Greenfield, 1998, p. 320). Moreover, having observational and informal contact with study participants can help detect inconsistencies in the data and reduce the risk of reactivity (Ross, 2004). Having a comprehensive, detailed, and profound understanding of the context in which the research takes place is imperative in formulating the research questions in a meaningful way and choosing appropriate procedures and analytic techniques (Ratner, 2002). Perhaps most important, though, engaging in interaction with participants simply gives the researcher an intuitive understanding of the domain of study (Ross, 2004).

While we have seen the sorts of methodologies described above employed to investigate the effects of culture within consumer research, it has typically involved what has come to be termed "consumer culture theory" (Arnould and Thompson, 2005), rather than studies focused on isolating psychological variables. Thus, consumer psychologists may need to incorporate some of the methodologies employed by interpretive consumer researchers with methodologies taken from social psychology if they are interested in ascertaining the relationship between culture and psychological processes of interest. This call to incorporate interpretive methods into consumer psychological research is similar to the call within cross-cultural psychology to incorporate methods from fields such as sociology and anthropology to move the field forward (Matsumoto, 2001).

While cultural-psychological methods can be quite varied, and can include surveys and experiments, Ratner (2002) considers interviews in some capacity to be integral to the research

effort. This is because interviews have the ability to penetrate beneath immediate responses to explore true motives, ascertain the frame of reference respondents use when answering, understand inconsistent responses, ascertain the importance of the issue to the respondent, and clarify the relationship between independent and dependent variables, among other things (Ratner, 2002).

Issues in the Cultural Approach

A cultural approach privileges the insider's, or the emic, above the outsider's, or the etic, explanations for pychological phenomena. Researchers engaging in this approach must remember that cultural effects are largely invisible to those who are in it, and thus the outsider's perspective is a valuable one to bring to any research project. A cultural approach, while focusing on the process of psychological phenomena, must remember that process and content are mutually constitutive, and must not downplay the content.

In addition to the above general concern, some specific criticisms of the cultural approach include that the construal of culture is based on "grand theories" (i.e., Asian thought versus Western thought, as depicted in Nisbett, 2003), and is too general to be meaningful (Ross, 2004). Another criticism is that conducting a study with Korean college students, for example, makes them representative of "Asian thought." That is, grand conclusions are taken based on small, potentially misrepresentative samples.

Critics have also pointed out that a cultural approach can tell us that a phenomenon is cultural, but not how it is cultural. Ratner (2002) gives the example that a cultural approach can tell us that there is a connection between commercial activity and depression, but it does not tell us how commercial activity is reflected in depression. As Ratner explains, the cultural character of depression is obscured even though its correlation with a cultural factor has been identified.

While the interdisciplinary nature of a cultural approach is considered one of its hallmarks, this leads to the acceptance of almost any theoretical viewpoint and methodology, and thus there is little integration of findings or agreement about the cultural aspects of psychology (Ratner, 2002). Ratner and Hui (2003) suggest that the entire field of cultural psychology needs to have clearly defined guidelines, as opposed to the type of theoretical and methodological heterogeneity advocated by proponents such as Miller (1997). It is unclear what these would be, however.

Now that we have outlined the epistemologies and methodologies associated with both the cross-cultural and cultural approaches, we turn to examining when each approach should be utilized in consumer psychology.

Which Consumer Research Questions Are Best Answered Through Each Approach?

Cross-Cultural Approach

Leung and colleagues (2005) point out that cross-cultural research has curiously not focused on identifying moderating variables, such as personality, situational elements, or technological uncertainty, and that this is an area in which taking a cross-cultural approach could move the field forward significantly. These authors argue that the cross-cultural approach has already answered the question of whether culture matters strongly in the affirmative, and now must answer the questions of when it matters and when its impact is moderated by other variables. Briley and Aaker (2006) have heeded this call by investigating when culture matters with reference to cognitive load and

deliberative processing, and finding that cultural effects are reduced when consumers have more time and cognitive capacity to thoughtfully process advertising information.

Recently, consumer researchers have begun to adopt what many are calling a dynamic constructivist approach to studying cross-cultural consumer behavior in an attempt to capture the dynamism of culture. In essence, a dynamic constructivist approach suggests that culture is not an overall mentality or value orientation (Hong and Chiu, 2001). Rather, this view sees culture as domain-specific knowledge structures that are accessed at certain times and not others. People will respond in a "cultural" way when they need to respond quickly, for example (Briley and Aaker, 2006; Hong and Chiu, 2001). The assumption is that when people have unlimited time and/or mental resources, they respond in the "universal" manner, which underpins the social psychology literature. "When cultural cues are not present, cultural theories remain cognitively dormant and have little effect on cognition. When cultural theories are activated by cultural primes and thus become cognitively accessible, cultural theories can have profound influences on judgments or behavior" (Hong and Chiu, 2001, p. 191).

A specific idea emerging from this is that people, especially bicultural people, can have flexible psychologies. This has been interpreted to mean that cultural proclivities can be primed (e.g., Hong et al., 2000). If people are presented with imagery that causes them to favor one cultural orientation, they will respond psychologically in one way; with other imagery that favors another culture, they will respond in a different way. To clarify, while this approach incorporates a dynamic view of culture and is very much preferable to the stable, monolithic view of culture, consumers are being compared from one cultural context to another, and culture is construed as an independent variable, and thus it is not compatible with a cultural approach. As Fiske (2002) explains, a cultural-psychological view of culture says that it comprises institutions, practices, systems of communication, relationships, and so forth, and hence the dynamic constructivist view—that construct accessibility is an important factor mediating the effects of these constituents of culture on the psyche—is not viable.

While a cultural-psychological approach argues that there is no mediation between culture and psyche, the dynamic constructivist approach would argue that even though culture is always present, people still focus on information selectively, and thus mediation manipulation brings cultural frames to the fore rather than having them lie dormant. Taking that view, consumer researchers such as Briley (Briley, Morris, and Simonson, 2000; Briley and Wyer, 2001, 2002) have begun to investigate the situational nature of cultural effects on well-established psychological constructs. This stream of research, conducted in the dynamic constructivist tradition, is premised on the idea that saliency of constructs such as national identity mediate cultural effects. Again, this is not in line with the cultural-psychological view that culture and the psyche are mutually constitutive. Under a cultural-psychological view, there is no mediation between culture and the psyche; culture's influence is always there, not just when certain aspects of it are made salient. Effects cannot be taken away by reducing salience or accessibility. As Leung and colleagues (2005) point out, "future research needs to explore whether priming results are too transient to be robust in the real world, and what the processes are that underlie these priming effects" (p. 367).

This stream of research continues to produce some intriguing results that challenge some of the assumptions common in a cross-cultural approach. For example, Briley and Wyer (2002) demonstrate that although priming Chinese participants on their Chinese identities stimulates them to avoid decisions that may have negative outcomes, a typical Chinese trait, the same can happen with American participants because belonging to a group, no matter what one's cultural background, leads to minimizing negative outcomes. Thus, the effect of group membership overrides the effects of cultural difference. Cross-cultural research in this tradition is helping to eliminate

the monolithic view of culture, and helping to delineate when cultural effects are salient, when they may not be relevant, and more generally helping to rectify the view of culture as something that is inevitably tied to national differences.

One of the criticisms leveled at a cross-cultural approach is that almost any statistically significant difference between two populations is labeled a "cultural difference." The term "culture" so widely accommodates any differences that it becomes an empty, useless term (Ratner and Hui, 2003; Ross, 2004). Many variables distinguish populations from each other, culture being only one of them. For example, in a recent study, Kim and Drolet (2003) find differences between U.S. and Korean subjects in the domain of variety-seeking tendencies. The U.S. subjects tended to vary the choice rules they employed in their tasks whereas the Korean subjects did not. These differences are attributed to the fact that Koreans have been labeled more collectivist in general and Americans have been labeled more individualist. It is difficult to determine from this study whether the differences between the two populations might be due to experience or expertise in varying choice rules, for example, rather than generalized differences between collectivist and individualist tendencies. Because in any large population, there is always a range of individuals with collectivist and individualist proclivities, it is impossible to know whether the particular Korean subjects used, that is, American university students born in Korea, adhered to collectivist norms in the given task situation, in that collectivist norms vary between national populations and decision or behavior contexts (Triandis, 2001). Similarly, Briley and Aaker (2006) investigate attitudes toward advertisements in Hong Kong and the United States, attributing the variations they find between the two populations to differences in the self, although they do not report on measurement differences in self-construal between the two populations.

One of the strategies advocated to more clearly ascertain psychological differences when comparing two populations is to use a third population that is expected to be similar to one of the populations on certain dimensions and similar to the other population on other dimensions (Ross, 2004). That is, if consumer researchers are interested in comparing advertising interpretations between Chinese and Americans, for example, they could conduct their experiment with Japanese respondents as well. The Japanese respondents would be expected to be more similar to the American respondents in terms of level of expertise in decoding advertisements, whereas they would be expected to be more similar to the Chinese respondents in terms of level of holistic thinking. Thus, when Japanese and American respondents react more similarly, it may be because both groups are utilizing an experienced interpretation strategy, and expertise may be the explanatory variable, whereas when Japanese and Chinese respond more similarly, it could be because of differences in cultural cognition strategies. Thus, it helps us to be more certain that differences between two populations are really due to culture.

For example, Choi and colleagues (2003) engage in the following strategy. When comparing Korean and American respondents on causal attributions, they include a third cultural group—Korean Americans. The responses of this third group help them in determining which of their results are really culturally based. Furthermore, as one of the theories of interest in their study was level of holistic thinking, instead of just assuming that Koreans are more holistic thinkers, they measured this. This allowed them to rule out alternative explanations—such as that Koreans are more polite than Americans and thus may have more difficulty abandoning a piece of information, or that Koreans are more familiar with the items and thus will not abandon them—and to confirm that the differing results were indeed due to varying levels of holistic processing.

Methodologically, it has been recognized within the cross-cultural approach that it is becoming increasingly difficult to compare frameworks from one cultural context to another. See van Herk, Poortinga, and Verhallen (2005) for a comprehensive review of this issue. However, as van

Herk, Poortinga, and Verhallen (2005) point out, most cross-cultural marketing studies do not address equivalence issues. Steenkamp and Baumgartner (1998) have, however, proposed a system for ensuring measurement equivalence across countries using multisample confirmatory factor analysis. Similarly, Yoo (2002) points out the importance of establishing scalar invariance when comparing cross-national groups, and not just comparing mean scores of composite variables across countries, which is the most common approach in the cross-cultural marketing literature. Yoo (2002) does acknowledge that scalar invariance can occur due to instrument or population differences, with instrument differences due to varying meaning of constructs or even scale points. While he offers a way to test whether instrument invariance has occurred, it is implicit that the researchers themselves must design a way to ensure meaning equivalence. While these methods serve to address many of the complex measurement issues that arise when engaging in comparative research of qualitatively different populations, they do not address the underlying theoretical issue of equivalence in the meaning of constructs, or "conceptual equivalence," in the terminology of Craig and Douglas (2000). Van Herk, Poortinga, and Verhallen (2005) argue that this construct bias is the most serious type of bias, as it, "precludes any form of comparison, making cross-national comparisons ambiguous or even erroneous" (p. 361). How to achieve construct equivalence is a matter of debate, however. Kjeldgaard, Csaba, and Ger (forthcoming) suggest that if an etic approach is taken, as is the case in cross-cultural research, that "construct equivalence becomes impossible to achieve."

It has been widely reported within both psychology and consumer behavior that some people are much more apt to be interdependent in the way they relate to and live in the world, and others more independent (Markus and Kitayama, 1991). This has important methodological consequences that cross-cultural researchers need to keep in mind. For example, in the realm of self-reports, Schwarz (2003) points out that people with an interdependent orientation are likely to be more knowledgeable about their own and others' behavior than are people with an independent orientation. Thus, the range of frequency scales will affect them less. Also, those with a more interdependent orientation typically value indirect communication, and context is important to their evaluations, thoughts, and so forth. This has implications for question-order effects, as previous questions can be expected to influence subsequent responses for people with an interdependent orientation (Schwarz, 2003). While priming effects can be seen with all populations, Schwarz (2003) reports that East Asians in particular are even more sensitive than others, especially if the questions are interrelated. The overall point is that self-reports are context dependent. The researcher should be aware of this when designing cross-cultural instruments, and should use knowledge of the psychology of the people under study to try to determine how the context may affect the responses, and design the instrument accordingly.

Cultural Approach

What does taking a cultural rather than a cross-cultural approach mean for the issues currently studied in consumer psychology? Some of the key underlying theoretical areas considered in much of consumer psychology include categorization, schemas, attitudes, group influence, and attribution. Nisbett and colleagues (2001) have recently outlined the ways that taking a cultural approach to these social psychological phenomena alters the fundamental way we think about these constructs. The authors document fundamental, noncomparable cultural differences in attention and control (detection of covariation, for instance), explanation and prediction (attitude attribution, for instance), and relationships and similarities versus rules and categories (including family resemblance versus rules as the basis for judgment of similarity, typicality versus logic, and justification of choice).

The authors conclude that qualitative differences in the above constructs "indicate that literally different cognitive processes are invoked by East Asians and Westerners dealing with the same problem. It is no exaggeration to state that qualitative differences between populations preempt any claim to universality" (p. 305). This implies that consumer researchers wanting to use these constructs to explain or predict consumer behavior will not be able to automatically assume that there will be meaning equivalence of constructs or cognitive process equivalence, implying that a cross-cultural approach cannot automatically be invoked.

Attitudes are among the most researched constructs in cross-cultural consumer psychology. Looking at attitudes in greater depth, Fiske and colleagues (1998) describe how in many non-Western cultures that emphasize interdependence, it may be regarded as selfish, immature, or disloyal for an individual to act in accord with personal attitudes—or even to express such attitudes—if they conflict with maintaining a smooth social equilibrium. Indeed, the same authors suggest that people with an interdependent sense of self need not hold a single attitude about an issue. This suggests that consumer attitudes will be malleable based on context and situation. Indeed, there is much empirical evidence within cultural psychology to suggest that attitudes are not central to behavior in many cultural contexts, and thus invoking the attitude construct in many cultural settings will result in nonmeaningful results. Drawing on work by Geertz (1973) and Miller (1984), what is important in understanding behavior in many cases is roles, rules, social expectations, and interpersonal relationships (external variables rather than internal ones). Thus, consumer researchers cannot automatically assume that investigating attitudes as an explanatory variable will be appropriate in many cultural contexts, and should ascertain this first before engaging in cross-cultural attitude comparisons. This can be ascertained through an in-depth understanding of the particular culture(s) under study, which can be achieved through extensive reading on cultural peculiarities, in-depth fieldwork that takes place in advance of the cross-cultural study, and/or having a research collaborator who is a native of the culture under study and is well versed in the indigenous psychology of that culture.

In a similar vein, there are also important cultural differences in terms of cognitive consistency based on culture. Many cultures, especially in East Asia, place less value on cognitive consistency, tolerating and even advocating cognitive inconsistency. Many eastern philosophical traditions believe that no statement, thought, or behavior can exist without its opposite—there is not one Truth but that truth is always partial (Tu, 1994). Thus, holding conflicting cognitions or having an inconsistency between cognition and behavior is not necessarily experienced as a negative state because opposites can peacefully coexist. This implies that reduced cognitive dissonance may not be a motive for consumers in many cultures. Indeed, duality has been shown to exist nonproblematically in the context of information processing (Aaker and Sengupta, 2000) and emotions (Aaker and Williams, 2002) with East Asian respondents.

Additionally, there is an important methodological implication from this notion of duality as a nonproblematic experience. In attitude assessment, Likert scales are based on the assumption that respondents want to create consistency among their cognitions, and this assumption may not hold true for non-Western respondents (Carr, Munro, and Bishop, 1996), implying that the use of Likert scales may not be appropriate in some cross-cultural consumer research. Further, Wong, Rindfleisch, and Burroughs (2003) demonstrate that using positive and reverse-worded items on Likert scales is problematic because people with varying cultural orientations do not understand or respond to positive and reverse-worded items in the same way. In particular, direction of wording in a Likert scale has a substantial effect on how East Asians respond to materialism scales because of the way that East Asians perceive materialism and antimaterialism, which is fundamentally different than the way Americans do, and the materialism scale was developed using American

respondents (Wong, Rindfleisch, and Burroughs, 2003). This is an example of a study that does take into account the meaning of the items on a scale, and recommends not using mixed-wording Likert scales at all when engaging in cross-cultural research.

The influence of others on individual behavior has been widely documented in both psychology (e.g., Snyder, 1979) and consumer behavior (e.g., Solomon, 1983). In North American and Western European cultural contexts, groups to which individuals belong are typically voluntary and relatively temporary (Markus, Kitayama, and Heiman, 1996), such as the Harley Davidson groups reported in Schouten and McAlexander (1995), whereas in many other cultures groups tend to be inevitable, obligatory, and permanent. Indigenous psychologies for people from these cultures may not be a psychology of individuals, but a psychology of the collective, in that the psychological processes and functioning of an individual are almost always with respect to others. Thus, when studying group influence in other cultures, it may not be a separate area of study as it is in Western cultures. In other words, group influence is ubiquitous, and virtually no behavior can be understood without taking it into account. In China, for instance, Tu (1994) points out that groups are necessary for personhood itself. Thus, when analyzing group influence over behavior in many cultures, models of group behavior that assume that acts and members can be substituted without altering the system will be less appropriate than models that consider such factors as what exactly the situation is, who is there, what is being asked or required, and what the history and assumed future of the relationship of those interacting are. Moreover, the unit of analysis when studying psychological processes may be the group in certain cultural contexts, whereas it is the individual in other cultural contexts (Eckhardt, 2004).

The above areas illustrate some of the ways that current thinking in consumer psychology might be subject to different views based on research from cultural psychology. For comprehensive reviews of additional areas, see Markus, Kitayama, and Heiman (1996), Fiske and colleagues (1998), and Nisbett and colleagues (2001). Taking a cultural-psychological view also suggests new research streams within consumer psychological research. Above all, it suggests that there should be less emphasis on cognitive and internal determinants of consumer behavior in many cultures. Rather, in many cultural contexts outside North America and Western Europe, a contextual view of the consumer in relation to his/her surroundings and important others is more appropriate than the individual, cognitive view of the consumer that is prevalent today. Moreover, taking a cultural-psychological perspective forces us to ask: At what level are consumer behavior and consumer psychological processes universal? Most anthropologists and cultural psychologists (i.e., Geertz, 1973; Greenfield, 1998) argue that there are universalities in all behaviors across cultures. The task is to find the level at which these exist within consumer behavior. For example, Wierzbicka (1999) suggests that while all humans have feelings, many emotions for which there are words in English are not universally experienced around the world. The opposite is also true—many indigenous emotions from other cultures have no equivalent in English, such as "shiao" in China, for example (Wong and Bagozzi, 2005), which would be roughly equivalent to "filial piety."

Utilizing a cultural approach is appropriate when investigating the effect of consumer behavior on culture as well as the reverse—looking at both directions of the two-way relationship. Similar to a cultural-psychological view, wherein culture is embedded in all behavior, not only determining behavior but being determined by behavior, Askegaard and Kjeldgaard (2002) suggest that taking what they term a reflexive view of culture allows consumer researchers to study not only how culture affects consumption but also how consumption affects culture. This view explicitly accounts for the dynamic nature of culture, suggesting that there should be a greater emphasis on investigating how various psychological processes related to consumption are affecting cultural change in the marketplace in a variety of cultural contexts. Simlarly, Holt (1994) argues that

cultural differences among consumers are driven by how categories such as personality variables or values are made meaningful and acted upon by a group rather than by the degree to which consumers endorse these variables. In other words, consumer researchers should focus on how local meanings are attached to universal categorizations rather than on assessing differences in universal categorizations. Holt (1994) suggests that cultural influences in consumer research should be understood in a meaning-based manner, and a cultural-psychological approach allows the researcher to embark on meaning-based investigations. As Greenfield (1998) notes, one of the hallmarks of a cultural-psychological approach is that it unpacks the *process* of how local meanings are attached to psychological variables, thus making it an appropriate method for conducting meaning-based research focused on observing the effects of consumption as well as the effects of culture on each other. Indeed, Jung and Kellaris (2004) point out that in doing cross-cultural research, the same results can be found in different populations, but these can be reached by differing psychological processes. Thus, combining cultural and psychological approaches and focusing on process can begin to paint a more complete picture (Jung and Kellaris, 2004).

Therefore, a cultural approach will be appropriate for answering consumer research questions that focus on the process of how various psychological constructs are formed. For example, how consumers construe possession meanings is a suitable topic for taking a cultural approach. This is because meanings are local constructs that vary in different cultural contexts. A nuanced understanding of possession meanings will not be possible in most cultural contexts without an experience-near view. For example, Eckhardt and Houston (2001) were interested in investigating the process of how consumers in urban China attach meanings to important possessions. Rather than follow a rather straightforward cross-cultural approach (e.g., Richins, 1994), the authors made the task for the respondents much more open-ended to allow unanticipated results to emerge. They observed that important relationships were considered possessions in the same way as a computer was considered a possession (similar to results found by Ross, 1991), and that whether one actually owned a possession or not was ancillary to considering it a possession. These results are in line with the general holistic thought pattern evident in Chinese psychology. A cultural approach, which in this case entailed more open-ended, qualitative data collection than previous studies conducted in a Western setting had utilized, enabled the interaction between cultural thought patterns and consumer meaning-making to emerge in its full complexity.

Similarly, Belk, Ger, and Askegaard (2003) employed a multimethod approach to study both the content and process of the phenomena of consumer desire. While they did not conduct their study under the rubric of cultural psychology, their goals and methods are congruent with this approach. They use a combination of journaling, depth interviews, projective techniques including collage construction, and metaphor analysis in three countries to develop a comprehensive, culture-based model of both the character of consumer desire and the process of how consumer desire develops and is enacted throughout consumer's lives. This analysis allows the phenomena of desire to be compared with and contrasted to more typical psychological constructs that are utilized in consumer research such as needs and wants. It also allows the authors to point out complex cultural differences in the ways that consumer desire is socialized in the three cultural settings under study (the United States, Turkey, and Denmark). They identify not only East–West differences but also Islamic–Christian differences, Old World–New World differences, and developing–emerging market differences, depending on the specific aspect of desire (what type of otherness is desired, ethics of the family compared with those of the individual, etc.).

There are other contexts in which a cultural approach is also appropriate. Singelis (2000) argues that using a more cultural or indigenous approach to psychology helps the researcher to avoid the ecological fallacy. This occurs when a researcher assumes an individual will behave in a certain

manner because of theories developed at the societal level. The ecological fallacy has been rampant in the cross-cultural psychological literature until quite recently, and is still widespread in the consumer-behavior literature today. For example, this fallacy occurs when societal-level variables such as individualism or collectivism are used to predict the individual behavior of people within those societies. Using a cultural approach, in which one is actively investigating how people experience their own realities from their own point of view, helps in avoiding a reliance on society-level variables to a priori predict individual behavior. Thus, consumer research questions of interest that focus on individual-level variables, for which it is unclear how societal-level cultural variables will predict individual behavior, are well suited to being investigated under a cultural approach.

All of the above examples illustrate the point that the constructs used, the unit of analysis used, and the general strategies for investigating consumer psychological phenomena in varying cultural contexts can be fundamentally altered by invoking a cultural-psychological approach. As mentioned above, psychological constructs commonly used in consumer research such as detection of covariation and judgment rules for determining typicality cannot be assumed to be comparable across cultures under a cultural approach. In addition, internally held constructs such as attitudes may not be useful predictors of consumer behavior at all in certain cultural contexts. From a unit of analysis perspective, taking a cultural approach toward consumer research accommodates the fact that there might be varying units of analysis appropriate to investigating the same phenomenon in differing cultural contexts. Thus, theoretically, major implications for consumer research stem from taking a cultural approach, most of them focused around a more relative view toward psychological unity and consistency.

There is not always a clear line separating cultural and cross-cultural research. The studies that we have used above as examples to show when using a cultural approach is appropriate have often not been labeled as such, and within psychology, many important cultural articles have appeared in the *Handbook of Cross-Cultural Psychology* or *Journal of Cross-Cultural Psychology.* Because the cultural approach is heterogeneous, it can be embodied in a variety of ways, whether it is labeled cross-cultural or interpretive or cultural.

Methodological Considerations When Using Either Approach

Cultural Approach

> [S]ince the study of culture is necessarily—at least for psychology—the study of meaning, it can never be accomplished exclusively within the empirical/quantitative tradition. Thus, the notion that formal psychological structures and principles generated by a nomothetic science on the one hand and cultural meanings on the other hand can be studied at the same time and in the same context as phenomena that constitute each other may be at best a chimaera. (Adamopoulos and Lonner, 2001, pp. 24–25)

One of the biggest challenges in designing methods to use in cultural psychology is that most people are not ordinarily aware of the cultural nature of their cognitions or emotions. That is, they can report the symptoms of their behavior to the researcher, but the researcher is the only one who can come up with the diagnosis, as s/he is able to see the water the fish swim in (Ratner, 2002). Some general guidelines for conducting cultural-psychological research include using a multimethod approach and engaging in some form of direct contact with the culture under study. This can take the form of carrying out ethnographic fieldwork to complement any experiments or surveys that may take place, or conducting focus groups before engaging in instrument design.

Culture has its greatest impact on naturalistic behavior, and in order to properly understand cultural effects, naturalistic behavior should be investigated to a greater degree than is typically seen in cross-cultural approaches (Greenfield, 1998). Furthermore, it is of utmost importance when designing a study to ascertain how to get meaningful responses. For example, many consumers with an interdependent self-construal arrive at evaluations and attitudes based on the nature of the context, not based on internally held values or beliefs. Correspondingly, asking them to respond to abstract questions or stimuli will often lead to inconsistent and nonmeaningful responses. To combat this, for example, Eckhardt and Houston (2002), investigating consumer brand meaning, used the methodology of scenario completion to situate the brand of interest in three disparate yet relevant situations, rather than asking respondents about brand interpretation in general. This allowed the respondents to be able to form responses based on the interpersonal scenarios depicted, which is psychologically appropriate for consumers with an interdependent orientation, and which also allowed the authors to investigate the *process* of how cultural meanings are formed.

One of the hallmarks of a cultural approach involves not separating process from content. Using a method (or series of methods) that can capture both is paramount. It is also important not to rely only on self-report measures of psychological constructs; therefore, if a procedure is being used that does rely on such measures, observational methods should be used in conjunction (Miller, 1997). Eckhardt (2000) designed her research effort to investigate the symbolic nature of consumption behavior in China with the methodological principles of cultural psychology in mind. She designed a four-study, sequential, and multimethod research program, which also included lengthy periods of immersion in the cultural context. Over a period of three years, she took four, one-month-long immersion trips to her culture of study and completed one study per trip. The first was an ethnographic study that established the connection between an interdependent self and the social nature of consumption (Eckhardt and Houston, 1998). It became apparent in this study that the way consumers conceptualize and value possessions was important to understanding symbolic consumption; the next study, using a group depth interview approach, was thus designed to explore the nature of possession meaning within the cultural context (Eckhardt and Houston, 2001). From this study it emerged that multiple meanings were being attached to objects, and this needed to be explored further. The next study, which used an experience-sampling methodology, was designed to pick up variations in meaning in a naturalistic manner (Eckhardt, 2000). This led to the discovery that the variations in meaning were related to specific relationship variables, and thus the final study, which took a scenario-completion approach, investigated the specific aspects of important relationships that led to malleable and incongruent meanings that consumers created and held, as they related to notions of self-construal (Eckhardt and Houston, 2002).

The research program was designed so that the constructs of interests emerged from the cultural context itself—that is, they were emic—and unwarranted assumptions were not made. Using such a wide variety of methods including ethnographic immersion yielded credible results in terms of representing the naturalistic psychology of the respondents. While the overall research program was time consuming, it was also very rewarding in that the results were quite novel, demonstrating that it was possible to design a rigorous research program using the tenets of a cultural-psychological approach.

Because one of the major concerns when designing a study is to ensure that the data collected are as meaningful as possible, the researcher needs to be flexible in design. Even when conducting comparative research, the methods might need to be noncomparable to achieve comparability in constructs. For example, Eckhardt and Houston (2001) altered their interview protocol relating to possession meaning when it became apparent that their Chinese respondents' views of what constituted a possession were quite different from those originally envisioned. Since the goal of

the study was to investigate meaning, the questions were altered to accommodate the fact that Chinese consumers considered intangible concepts and products they did not actually own to be their possessions, rather than sticking to the original interview protocol taken from Richins (1994), which was developed for American respondents.

The ways in which consumers are asked to respond to stimuli, whether these are questions, visual stimuli, or scenarios, should also be designed to be culturally appropriate, and may not be the same in different cultures. In China, for example, Eckhardt and Houston (2002) designed their study so that participants could respond to scenarios orally as well as in written form, as many Chinese consumers are not used to expressing their inner thoughts and feelings in written form. Having them answer in written form was imperative, however, in order to see their answers before group interaction.

Moreover, many Chinese consumers are not comfortable with expressing their inner thoughts and feelings verbally on an individual basis, and thus age-relevant groups were convened to make the respondents as comfortable as possible, and no consumers over the age of forty-five were included in the study at all. Consumers age forty-five and up have experienced the full brunt of the Cultural Revolution, and thus are extremely reticent about participating in exercises such as these.

Such cultural distinctions will be different in each cultural context where research is conducted, and thus it will be difficult to implement comparative methodologies in a uniform manner. See Eckhardt (2004), for example, for a thorough discussion of some of the idiosyncrasies of Chinese culture and how they affect the methodological approach that consumer researchers should take there.

Assessing the validity of data collected using a cultural approach will take a different form than is typically applied to cross-cultural data. Interpretive validity and ecological validity are two types of validity especially suited for cultural-psychological methods (Greenfield, 1998). Using a standard of interpretive validity means the researcher must ascertain what the data collection instruments mean to the respondents (i.e., understand the epistemological presuppositions of the respondents) and make sure all data collection procedures adhere to this understanding. Ecological validity refers to whether the behavior or responses exhibited by the respondents during the data collection process appear in other everyday contexts or not. Ecological validity is implicit in a cultural-psychological approach, as the goal of the research is to understand psychological processes in an experience-near fashion, from the respondents' perspective. Using ethnographic methods is an effective way to achieve this, but triangulating data collected in a multimethod fashion focusing on daily behavior to ascertain ecological validity is also an option.

While quantitative studies strengthen a cultural psychological approach after qualitative methods have established an appropriate understanding of the culture under study, some methods of quantitative analysis will be more appropriate than others. Analysis of variance and regression, for instance, are inappropriate, as culture should not be construed as one or more independent variables (Greenfield, 1998). Ross (2004) outlines some specific quantitative research techniques that can be incorporated into a grounded understanding of culture and cognition, including sorting tasks, rating tasks, and ranking tasks. Ratner (2002) extols the virtues of natural experiments as tools to differentiate cultural factors and identify their relative influence on each other.

Structural equation modeling is an especially appropriate method, as it allows a variable to be both cause and an effect of observed behavior, as is assumed under a dynamic view of culture. For example, although Bagozzi, Verbeke, and Gavino (2003) characterized their research as cross-cultural, the structural equation modeling method they used fits Greenfield's conceptualization of a cultural approach. In comparing the experience of shame in the Netherlands and the Philippines among salespeople, the authors did not assume that shame is a monolithic construct. They identified four dimensions of shame in their Dutch sample, for example, and three in their Philippine

sample, and these exhibited only some overlap. By employing a structural equation modeling analysis, they were able to identify not only the qualitative differences in the experiences of shame between their two cultural contexts, but also the effects of shame on behavior, which were not the same for the two populations, and related to alternate self-construals. Wong and Bagozzi's (2005) study investigating cultural differences in emotional intensity using a structural equation modeling approach reinforces this point, as the phenomenon under study is also cultural, and there are qualitative differences among varying populations. This use of structural equation modeling highlights the point that when alternate factor structures emerge in various cultural contexts, as seen above, we can use those to discover the emic aspects of a culture.

Moreover, when engaging in comparative research, the research instrument will often have to undergo decentering of the original content and language (Wierzbicka, 1993). A decentering approach involves not favoring the source language (i.e., not making the translations fit the cultural categories created by the source language), but rather using such variables as paraphrasing and context to come up with phrasings that will reflect local understandings of concepts (Campbell and Werner, 1970). A decentered approach to translation implies that there is no one correct way to translate a phrase into another language, but rather seeks to make the two versions coordinated in different languages. This approach has been characterized, in comparision with direct translation and back-translation, as the most highly regarded translation technique when engaging in cultural consumer research (Green and White, 1976). Specific procedures include coming up with alternate interpretations of metaphoric and idiomatic expressions and synonyms for phrases and deciding which most appropriately represent what the original speaker was trying to get across.

In sum, when using a cultural approach in consumer research, conducting a sequence of studies using complementary methods and procedures as well as working in insider–outsider teams is recommended. The latter are research collaborations wherein at least one member of the research team is from the culture under investigation and at least one member is not. This allows at least one person to be able to assist in culturally appropriate research design as well as to be a "cultural translator" of the data after they are collected. It also allows at least one person to be able to see the methodological process from an outsider's perspective. Research collaborators do not necessarily have to be coauthors; they can be academics from the culture under investigation who provide consulting on the project, or hired experienced market researchers.

Cross-Cultural Approach

To undertake thoughtful, meaningful cross-cultural research, certain tools can be used to increase confidence in the obtained results. In attitude assessment, for example, Likert scales are based on the assumption that respondents want to create consistency among their cognitions, and this assumption may not hold true for non-Western respondents (Carr, Munro, and Bishop, 1996). This implies that the use of Likert scales may not be appropriate in some cross-cultural consumer research. See also Heine and colleagues (2002) for additional reasons, related to the reference-group effect, that using Likert scales in cross-cultural work can be inappropriate.

As Ji, Zhang, and Nisbett (2004) have recently suggested, language affects the way that people reason. That is, translating an English instrument into Mandarin will affect the way that people respond, and thus language can be a cuing effect for reasoning style (Ji, Zhang, and Nisbett, 2004). Therefore, cross-cultural consumer researchers need to ascertain whether language effects qualitatively affect the construct under study rather than assuming comparability of the translated instruments.

Bond and colleagues (2004) argue that the cross-cultural approach has focused too much, "on

measures of psychological process, such as self-esteem, values, even personality itself" (p. 567). These authors argue that a more behavioral focus is needed get a more accurate picture of cross-cultural similarities and differences. This would imply comparing such behaviors as helping or pace of life, in that these behaviors "act on the social system from which they emerge to shape that social fabric" (p. 567). Thus, cross-cultural research could focus more clearly on comparing behaviors rather than psychological processes, as in Houston and Eckhardt (2001), for example.

In sum, although we have criticized the use of Western research instruments in non-Western settings, we do recognize that, for the most part, this is all survey researchers have to go on at the moment. How the surveys are conducted and how the survey research data are interpreted and used are critical, and it is hoped that cross-cultural research incorporates some of these recommendations toward this end. For example, when a scale is designed keeping in mind particular factors that the respondents will load onto, and this does not occur in a second culture, it can provide much food for thought with regard to future research, qualitatively changing the way the researcher thinks about the construct of interest. The strategies discussed in this section attempt to offer a fruitful way forward for cross-cultural research to overcome some of the limitations of a survey approach.

On the Complementarity of Cultural and Cross-Cultural Perspectives

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. The result of research adopting one perspective may suggest research using the other. Moreover, it is important to realize that a cultural perspective does not eschew comparative research. There are many cross-cultural consumer issues that should be studied in traditional fashion with an emphasis on equivalence in methods and variables. For example, dependent variables dealing with observable behavior (e.g., brand choice, loyalty, etc.), not processes or motives, can be appropriate for cross-cultural comparisons using equivalent methods. In this regard, Houston and Eckhardt (2001) use Hofstede's categorizations to investigate cross-culturally a wide variety of observable behaviors relating to food consumption, such as brand choice and brand loyalty in different Asian countries. Such observable measures are descriptive accounts of phenomena that reveal themselves in a similar manner across cultures. Thus, using a framework such as this is appropriate and can help to identify patterns of similarity in a global context. For example, back-to-back purchases of the same brand of a product at the same store as a measure of repeat behavior can be represented in the same way across cultures if comparative research on purchasing patterns is being done. Of course, the researcher must keep in mind that supply issues vary to a great extent across country borders, and the measures for brand loyalty may not be the same in all locales.

When we observe differences in such measures across cultures and try to determine the underlying psychological reasons for the differences, the tenets of cultural psychology need to be invoked. For example, Briley, Morris, and Simonson (2000) argue that purchase patterns for products such as personal computers and appliances are comparable across cultures because consumers exhibit similar needs in these product categories, but there are qualitative differences in the explanations that they provide for their purchase decisions. Thus, the reason why they have similar purchase patterns, and perhaps the processes used to arrive at those purchase decisions, need to be investigated using a cultural rather than cross-cultural approach.

See Table 3.2 for a comparison of cross-cultural and cultural-psychological approaches that can be used by consumer researchers to evaluate which is appropriate to answer their questions of interest.

Many consumer psychologists who have conducted either cross-cultural or cultural research will testify that it is very difficult to conduct any type of research outside of the North American/Western

Table 3.2

A Consumer Researcher's Guide to Understanding the Distinction Between Cross-Cultural and Cultural-Psychological Approaches

	Cross-cultural psychology	Cultural psychology
Epistemological grounding	• Universalistic • Culture construed as an independent variable • Culture viewed as consistent and external to the individual • Perspective stems directly from social psychology • Assumes Western psychology is "basic" psychology	• Relativistic • Culture construed as both independent and dependent variables • Interdisciplinary • Human behavior may be non-comparable across cultures • Culture and the psyche are mutually constitutive phenomena • Process and content of the mind cannot be separated
Representative methodological approaches	• Explanatory • Typically experimental or survey-based methods • Methodology typically developed in a Western context • Focus on achieving comparability	• Interpretive • Heterogeneity of methods • Experience-near view • Flexible design • Researcher shares the perspective of the subject • Equivalence in meaning is established before comparing across cultures
When it is appropriate to use	• To compare observable consumer behaviors such as brand choice or loyalty • After qualitative methods have established meaning equivalency	• For the study of psychological processes • When nonobservable constructs are under investigation • When methodologies across cultures should differ to take into account varying psychologies

European/Australian–New Zealand context, and thus researchers engaged in either approach should combine efforts to determine common solutions to overcoming barriers. Most other cultures simply are not self-oriented on inner thought processes in the way that "Western, individualistic" cultures are. People in these other cultures typically cannot articulate their thought processes and feelings regardless of which approach is taken (Fiske, 2002). It is imperative that researchers from both cross-cultural and cultural perspectives continue to innovate and share their ideas with each other so that the field of consumer psychology can become truly non-Western-centric, and represent the psychologies of a wide variety of peoples.

Conclusion

This is an exciting time for consumer researchers interested in studying culture. Cultural perspectives still remain in a marginal position in the discipline, and psychological theory and generalizations are formulated without reference to cultural considerations (Miller and Schaberg, 2002), but this is changing at a swift pace. There is no doubt that what has been called cross-cultural consumer research is currently undergoing a time of reinvention and rapid progress. There is beginning to be

a consensus in the literature that using constructs such as individualism and collectivism—which fundamentally construe culture as static—no longer provides the most compelling insights into differences in thought processes and behavior across cultures. However, there are large differences in how cross-cultural and cultural consumer psychologists are going about incorporating dynamism into their models of culture. While some experimental and survey-based researchers are taking a mediating role to explain culture differences, culture-based researchers are taking a more holistic, mutually constitutive view toward the interplay of culture and the psyche.

Consumer researchers have had little exposure to a cultural-psychological approach, and it is hoped that this review has begun to bridge that gap. Consumer psychologists need to evaluate whether a cross-cultural or cultural approach is most appropriate to answer their questions of interest rather than automatically to invoke a cross-cultural perspective. If consumer psychologists want to take a cultural rather than a cross-cultural approach to answering research questions—which will be most applicable when addressing issues of psychological process and meaning—they will have to embrace methods that go beyond standard experimental ones, and also embrace a different epistemological grounding than what is standard in consumer psychology (e.g., a relativistic view toward the comparability of psychological processes across cultures). While cultural psychology is still a relatively undefined field, it offers immense opportunities to be adopted within consumer research, insofar as many of the issues in which its use is most appropriate—such as rapidly changing social influences observed in cultures in flux—are seen largely within a global consumer context (Eckhardt and Houston, 2002). In sum, while there will always be areas of consumer research that will be most appropriately addressed using a cross-cultural approach, many areas of consumer research are crying out for a cultural approach. The field of consumer behavior has the opportunity to be at the forefront of social science research through incorporating a cultural outlook in the field when appropriate.

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Chapter 4

CONSUMER RESPONSES TO PRICE AND ITS CONTEXTUAL INFORMATION CUES

A Synthesis of Past Research, a Conceptual Framework, and Avenues for Further Research

Dhruv Grewal and Larry D. Compeau

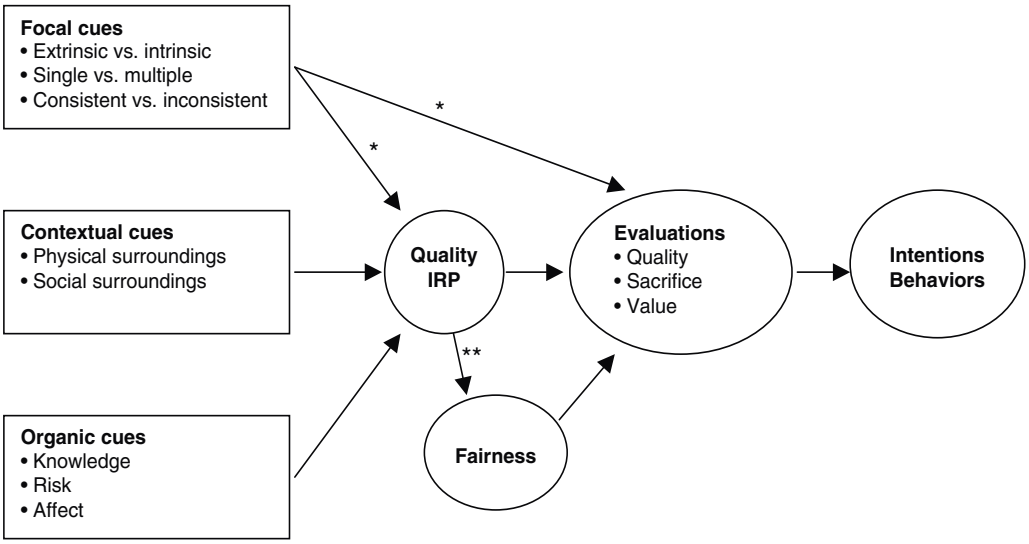
Abstract

The authors synthesize 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, as well as to examine the impact of this contextual information itself. Using adaptation-level theory and transaction utility theory, they present a conceptual framework that synthesizes prior research on price, reference price, and other information cues and their effects on consumers' price expectations, evaluations (fairness, quality, sacrifice, and value), and behavioral intentions (purchase and search). The authors develop theoretical propositions and summarize research evidence related to these propositions from various substantive domains. Finally, they discuss the implications of this conceptualization.

Consumers face a myriad of choices in most of their buying decisions and are bombarded with a broad range of information in vastly different forms to help them make these choices. Some information comes in the form of advertisements, packaging, or even store displays, whereas other information is communicated more implicitly by the brand, the store name, or even the physical characteristics of the product itself. Possibly one of the most studied information cues, and yet the least understood, is price, though price can only be meaningful in the context of other information. Thus, the price cue and the contextual information cues that provide price with its meaning are the focus of this review. In this chapter, we propose a theoretical framework that synthesizes existing research and provides a research agenda for further research addressing how price expectations or internal reference prices (IRPs) are formed, the impact of other contextual information cues, and the effects of these information cues on consumers' responses, including their formation of IRPs, perceptions of quality, and price judgments (Figure 4.1).

The inclusion of contextual information is important because price by itself is not very informative. Consumers must integrate and compare price information with other information (e.g., product, brand, store information) to make the price meaningful. At the very least, consumers must have some notion of the product associated with the price before it can become meaningful.

Figure 4.1 **The Conceptual Framework**



*Relationship moderated by contextual and organic cues.
**Link from IRP to fairness.

For example, how does one judge a selling price of $18,000 for a car? Without other information about the car itself (e.g., year, mileage, condition), other prices for similar cars, or even what the price of the car was before it went on sale, the $18,000 price is mostly useless. Thus, to understand the impact of price as an information cue, we must also understand other information cues used by the consumers in the context of their responses to price.

Intense competition for limited consumer dollars has created a confusing buying environment that negates at least one fundamental assumption of classical economic theory: consumers have perfect information about products and prices. Even if consumers had perfect information, they lack the ability to process all that information effectively to make perfect purchase decisions. Despite the advent of the Internet and presence of numerous shopping bots, such as Bizrate.com and MySimon.com, it appears that consumers are not processing or using the available information (Grewal and Lindsey-Mullikin, 2006; Lindsey-Mullikin and Grewal, 2006).

Often, much of this information is presented in the context of the many different price promotions offered by retailers (Biswas and Blair, 1991; Biswas et al., 1999; Compeau and Grewal, 1994; Compeau, Grewal, and Chandrashekaran, 2002; Compeau, Grewal, and Grewal, 1994). Thus, not only are information cues such as brand and store name presented, but several price cues (rather than just one) are presented in the form of a selling price, along with other reference prices (e.g., regular price, manufacturer's suggested retail price [MSRP], compare at) (Compeau and Grewal, 1998; Grewal and Compeau, 1992). In this uncertain environment, buyers use information cues (e.g., price, reference price, brand name, store name) to expedite their decision-making processes (Dodds, Monroe, and Grewal, 1991). These information cues serve as heuristics in the attempt to facilitate an efficient decision process, albeit not necessarily a perfect one (Miyazaki, Grewal, and Goodstein, 2005).

In some situations, buyers evaluate and process the price of a product in relation to some price standard (Grewal, Monroe, and Krishnan, 1998; Monroe, 1973). This standard or *reference price*,

often in the form of a price expectation, is the price that consumers compare to the actual selling price of the product, which helps them facilitate their evaluation process and make value judgments regarding the product. How consumers form these price expectations, or IRPs, and their effects on product evaluations remain largely unexplored. Moreover, these conceptualizations need to be incorporated into existing conceptualizations to help us better understand the processes that underlie how consumers arrive at judgments of price fairness (Bolton, Warlop, and Alba, 2003; Klein and Oglethorpe, 1987; Monroe, Compeau, and Grewal, 1991; Winer, 1986).

Consumers also evaluate and process price information in the context of external reference prices through the price-promotional offers of retailers. These price-promotional offers appear in many different forms depending on how the selling price is framed, such as "on sale, $90," "$100 less 10% discount," "$100 with $10 rebate," or "was $100/now $90." Because it may affect consumers' product evaluations, we need to understand the effects that the framing of a price promotion has on consumers' product evaluations and choice (Compeau et al., 2004; Kahneman and Tversky, 1979; Monroe, 1987; Roggeveen, Grewal, and Gotlieb, 2006).

In addition, these reference prices are extensively used by retailers to convey a price deal. The contrast of the selling price against some higher advertised reference price (e.g., list price, original price) is an attempt to enhance consumers' perceptions of savings or the value of the offer (e.g., Berkowitz and Walton, 1980; Blair and Landon, 1981). Various researchers have called for research into why and when price deals are effective or ineffective (Compeau and Grewal, 1998; Grewal, Marmorstein, and Sharma, 1996; Licata, Biswas, and Krishnan, 1998; Lichtenstein and Bearden, 1989; Lichtenstein, Burton, and Karson, 1991; Raju and Hastak, 1980; Urbany, Bearden, and Weilbaker, 1988).

The objective of this chapter is to develop a conceptual framework that integrates theories from economics and psychology to explain the effects of price information cues, in the context of other information cues, on consumers' responses, including how they develop an IRP and their subsequent subjective evaluations, such as price fairness, quality, and value. In addition, we offer directions for further research on the effects on price, reference price, and other information cues on consumers' decision-making processes during product evaluations.

The Conceptual Framework

Our proposed conceptual framework (Figure 4.1) articulates the effects of information cues on consumers' IRPs, product evaluations, and behavioral intentions. Built using extant research (Grewal, Monroe, and Krishnan, 1998; Zeithaml, 1988), the proposed framework contributes the following elements:

1. A complete articulation of the effects of information cues on consumers' development of IRPs and price fairness judgments;
2. The incorporation of price fairness as a mediator of the effects of IRP on consumers' evaluations;
3. An enhanced explication of the effects of intrinsic cues on consumers' evaluations;
4. An integrated model of the impact of contextual cues on consumers' evaluations;
5. A conceptualization of consumers' perceptions of value as a multidimensional construct; and
6. The inclusion of the effects of product evaluations on consumers' price search.

Figure 4.1 thus provides a framework for addressing the role of information cues on consum-

ers' IRPs and product evaluations. In the remainder of this chapter, we further develop various components of the framework, namely, information cues and product evaluations, the formation of IRPs and their relationship with price fairness, the concept of sacrifice and its effects, and the concepts of value formation and behavioral intentions. We explicate the relationships among these variables using theories from psychology and economics, and, wherever available, with the support of extant empirical research. We also present some propositions based on the framework and results of prior research pertaining to these propositions.

Information Cues

Helson's (1964) adaptation-level theory provides an appropriate theoretical framework by which to structure information cues. A product is more than a physical good, in that it also includes an array of variables, such as price and brand name. These variables provide information cues to consumers, who use them in their decision-making process (Scitovszky, 1945). According to this theory, a consumer's behavioral response to an information cue is a byproduct of his or her adaptation to previous information cues.

Helson's (1964) theory identifies three classes of information cues: focal, contextual, and organic. *Focal* cues are information cues to which consumers respond directly, such as the product's price or brand name. *Contextual* cues are other stimuli that provide the context or frame of reference within which consumers examine the focal cue, such as the store's atmosphere. *Organic* cues relate to consumers' residual effects (e.g., knowledge, involvement) (Nwokoye, 1974). Relative differences in information cues are important with regard to their influence on consumers' product evaluations (Krishnan and Monroe, 1987; Leavitt, 1954; Tull, Boring, and Gonsior, 1964). We examine each of these classes of cues in more detail, along with how specific cues within these classes affect consumers' responses.

Focal Cues

Focal cues can be classified as either extrinsic or intrinsic (Dawar and Parker, 1994; Olson and Jacoby, 1972; Richardson, Dick, and Jain, 1994). Intrinsic cues are product attributes (e.g., color, nutrition content) that cannot be changed without physically altering the product, whereas extrinsic cues are external, product-related attributes that are not part of the physical product (e.g., price, brand name, and store name). Scitovszky (1945) was the first to suggest that, due to the increasing complexity of the marketplace, contemporary consumers are likely to infer product quality using various information cues in addition to intrinsic product information.

A dominant consumer judgment response in prior research, perceived quality refers to the consumers' judgment of the excellence of the product (e.g., Dodds, Monroe, and Grewal, 1991; Monroe and Krishnan, 1985; Rao and Monroe, 1989; Zeithaml, 1988). It is only right that we focus first on this dependent variable because it has been prevalent in almost every effort to examine consumers' responses to price information (Grewal, Monroe, and Krishnan, 1998; Miyazaki, Grewal, and Goodstein, 2005; Rao and Monroe, 1988). Information cues (focal intrinsic cues, focal extrinsic cues, contextual cues) have been hypothesized to have a positive effect on consumers' product quality perceptions. To infer quality, consumers may use the product's inherent attributes or intrinsic cues. For example, consumers might perceive that the higher the wattage of a stereo system (intrinsic cue), the better the quality of the product is. Therefore, intrinsic information cues may have a positive effect on consumers' product quality perceptions (Jacoby, Olson, and Haddock, 1971; Olson and Jacoby, 1972; Rao and Monroe, 1988). Extrinsic information cues

also have a positive effect on consumers' product evaluations. For example, the more positive the image associated with the brand name, the greater the consumers' perceptions of quality will be (Dodds, Monroe, and Grewal, 1991; Rao and Monroe, 1989). Price, brand name, and store name are all extrinsic cues that have been the focus of considerable research interest (for comprehensive meta-analytical reviews, see Monroe and Krishnan, 1985; Rao and Monroe, 1989).[1]

P1: There is a positive relationship between the type of information cue (intrinsic or extrinsic) and consumers' perceptions of quality. For example, the more reputable the retailer, the higher are consumer perceptions of quality.

Evidence. A meta-analysis by Grewal (1989) of ten studies examining the effects of intrinsic cues on consumers' perceptions of quality indicates a significant relationship between them. Similarly, consumers use extrinsic cues to infer product quality; according to the results of a meta-analysis by Rao and Monroe (1989), both brand and price have significant relationships with perceived quality. Research in this multicue domain has shown various instances in which the effect of a given cue may be moderated (or interact) with other cues, which further supports and necessitates that any conceptualization or study of price as information must be placed in the context of other information cues. Consequently, researchers now employ multicue research designs to understand how consumers combine information from different cues to form their quality perceptions.

Building on these findings, researchers have recently explored the consistency of information cues with interesting implications. Miyazaki, Grewal, and Goodstein (2005) build on cue consistency theory (e.g., Maheswaran and Chaiken, 1991) and traditional information integration theory (e.g., Anderson, 1965, 1971, 1981, 1996) to suggest that when cues are consistent (high price/high warranty), consumers use them jointly—that is, in some form of linear average of the cues—to form their quality perceptions (high quality). However, when cues are inconsistent (e.g., high price/low warranty), they are likely to focus on the negative cue to form their quality perceptions (Ahluwalia, 2002; Campbell and Goodstein, 2001).

P2: There will be an interaction effect of multiple extrinsic information cues. For example, extrinsic cue 1 and extrinsic cue 2 will interact to influence consumers' perceptions of product quality such that the effect of the cues will be stronger when consistent (e.g., high price/high warranty) than when inconsistent (high price/low warranty, low price/high warranty). When the two extrinsic cues present inconsistent information, the more negative cue will be more salient and dominate evaluations, which will not differ from those prompted by consistent low levels of the two extrinsic cues (e.g., low price/low warranty).

Evidence. Miyazaki, Grewal, and Goodstein (2005) demonstrate support for this proposition using a series of five experiments that manipulate different extrinsic cues (e.g., price, warranty, brand name, store name, country of origin). However, research has not explored the link between the consistency or inconsistency of information cues and consumer IRPs or their assessments of price fairness.

Other Focal Information Cues—Advertised Reference Prices and Price-Matching Guarantees

Price comparisons or reference price cues (e.g., original price/sales price versus selling price alone; semantic cue of MSRP, compare at, and regular price) are information cues used by consumers in

forming their perceptions of quality, value, and internal reference prices (Compeau and Grewal, 1998; Grewal and Monroe, 1989). Over the past few decades a number of researchers have focused their attention on the role of these price cues. Studies have examined how, given the presence of an advertised reference price, consumers evaluate selling prices when forming value perceptions. Within this domain a number of advertised reference price methods have been examined (e.g., manufacturer's suggested list price [MSLP], regular price, and compare at). The combined price offer has generally been examined under the broader rubric of semantic price cues. Compeau and Grewal (1998) conducted a meta-analysis of thirty-eight studies.

We will briefly summarize what is known from this field of inquiry:

- Presence of an advertised reference price, as compared with the absence of an advertised reference price, in a price offer enhances internal reference prices and perceptions of value and lowers search intentions (Compeau and Grewal, 1998).
- As the level of the advertised reference price increases, internal reference prices, perceptions of value, and purchase intentions are enhanced and search intentions reduced (Compeau and Grewal, 1998).
- As the level of the advertised sale price decreases, perceptions of value and purchase intentions are enhanced, while internal reference prices and search intentions are decreased (Compeau and Grewal, 1998).
- Consumers do not have a consistent understanding of some of the commonly used reference prices such as MSLP and "compare at" (Compeau, Lindsey-Mullikin, Grewal, and Petty, 2004).

Surprisingly, the field of inquiry in the domain of comparative price advertising and semantics cues has not focused efforts on how these cues affect quality perceptions. More work is needed to assess P1 and P2 within the context of this domain.

An emerging area of research within the information cue paradigm focuses on understanding the role of price-matching guarantees (PMG). A PMG reflects a retailer's policy to match prices on given items to the prices offered by competing retailers in their trade area for a specific time period, often thirty days. These PMGs have been shown to be powerful extrinsic information cues (Biswas et al., 2002; Jain and Srivastava, 2000; Kukar-Kinney and Grewal, 2006; Lurie and Srivastava, 2005; Roggeveen, Grewal, and Estelami, 2005; Sivakumar and Weigand, 1996; Srivastava and Lurie, 2001, 2004), and research has consistently found that a PMG has a positive effect on consumers' responses, including their value perceptions, search intentions, and purchase intentions. However, Biswas and colleagues (2002) also find that these effects are moderated by reference price, an important information cue that we turn to in much greater detail shortly. Additional research is also needed to assess the role of PMG as an extrinsic cue. Research studies could be conducted to test P1 by manipulating multiple levels of PMG (absent, present-limited coverage, present-wide coverage). Furthermore, research could assess the interaction of PMG cues with other intrinsic and extrinsic cues.

Contextual Cues and Their Moderating Effects

Alexis, Haines, and Simon (1968) find that contextual cues, such as salesperson response and crowd size, influence consumers' shopping behaviors. Other physical surroundings (e.g., office, store) also have impacts. Specifically, more positive physical surroundings result in higher consumer perceptions of quality for a product or service (Baker et al., 2002; Bitner, 1990). Finally,

Belk (1974) finds that contextual cues account for nearly half the variance in consumers' product preferences.

Contextual cues not only affect consumers' product evaluations but also their choice (Kahneman and Tversky, 1979, 1984). As a result, certain relationships in our framework may be moderated. For example, the effects of information cues on consumers' perceptions of quality (i.e., P1) may be moderated by contextual cues such as reference prices and price judgments.

We propose that the effects of information cues on consumers' perceptions of quality are likely to be moderated by contextual cues. For example, research on retail atmospherics has focused on physical and social surroundings, such as a neatly arranged versus a messy store (physical) or an uncrowded versus a crowded store (social).

P3: The relationship between the focal information cue and consumers' perceptions of quality is moderated by contextual cues.

Evidence. Additional research needs to test this proposition carefully. For example, research could manipulate two levels of retailer reputation (high versus low) and two levels of physical surroundings (high/a neatly designed store versus low/a messy store) to examine the moderating effects of a contextual cue. Atmospheric research has suggested that using a combination of a written scenario and videotapes may be an appropriate way to create such experimental manipulations (e.g., Baker et al., 2002). Thus, researchers could explore whether the effects of store reputation are more pronounced when there is a neatly designed store surrounding cue, and the result can be viewed as similar to the consistency hypothesis in P2.

An alternative prediction might argue that the contextual cue sets the decision frame for consumers; that is, they could look at a messy store as a negative frame. Research in prospect theory might be brought to bear in such conditions. Prior research has used prospect theory to explain how framing can moderate the effects of other information cues. This stream of research has demonstrated that the effects of price (extrinsic cue) are likely to be more pronounced when the frame is negative than positive (Grewal, Gotlieb, and Marmorstein, 1994, 2000; Roggeveen, Grewal, and Gotlieb, 2006).

Why is this the case? When consumers are contextually placed into a negative frame, they are likely to seek more risk and look for other heuristic cues to make a quick evaluation. In such a situation, cues such as higher price or more reputable store names are likely to evoke higher perceptions of quality. However, when they are placed in a positive frame, they are likely to be risk aversive in their decision processes, and the effects of any given cues (e.g., price, retailer name) are less likely to have incremental effects.

Finally, research has focused on how the effects of semantic cues (e.g., compare at/sale price, regular price/sale price) on consumer evaluations may be moderated by the context in which the consumers evaluate the price offer. For example, Grewal, Marmorstein, and Sharma (1996) find that the regular price/sale price offer is more effective than the compare at/sale price offer when the consumer is in a store. However, the compare at/sale price offer is more effective than the regular price/sale price offer when the consumer is at home. Similar results were found by Krishnan, Biswas, and Netemeyer (forthcoming). These studies further highlight the moderating roles that contextual cues play, but considerable additional research in these areas is desirable.

Organic Cues and Their Moderating Effects

Certain relationships in the framework may be moderated by other variables. For example, the effects of information cues on consumers' perceptions of quality (i.e., P1) may be moderated by

various organic cues. Peterson and Wilson (1985) have called for research to identify the variables that moderate these relationships. Our conceptualization (Figure 4.1) incorporates the effects of three moderating variables: knowledge, risk, and affect.

Knowledge. As we discussed previously, classical economists assumed that consumers possessed perfect information, which is akin to suggesting that consumers are knowledgeable or familiar with the product. This assumption, however, is inaccurate. In the absence of perfect information, consumers employ certain information cues to facilitate product evaluations (Scitovszky, 1945; Wilkie, 1974). Thus, we propose that

P4a: Consumers' knowledge about the product and product market moderates the effect of information cues on product evaluations.

Evidence. Rao and Monroe (1988) find empirically that price–perceived quality and intrinsic cue–perceived quality relationships are moderated by consumers' product knowledge. In a similar vein, Biswas and Sherrell (1993) find that the effect of brand image on price estimates is higher for novice customers than for experts. These studies reinforce the need to take into consideration individual consumer factors, such as prior knowledge and expertise, in explorations of the effectiveness of various information cues (e.g., product attributes, warranty, price, brand name, store name, country of origin) on a host of evaluation measures.

Risk. The price–perceived quality relationship is also moderated by consumers' perceptions of the risk if they were to make an unsatisfactory purchase (Peterson and Wilson, 1985; Shapiro, 1973). One method by which consumers may protect against making unsatisfactory purchases is to choose a higher-priced product to reduce the risk of purchasing a product of lower quality (Shapiro, 1973; Tellis and Gaeth, 1990). Thus, we propose that

P4b: Consumers' risk perceptions moderate the effect of information cues on product evaluations.

Evidence. Shapiro (1973) finds a higher price–perceived quality relationship in situations in which consumers perceive a higher risk. Landon and Shafer (1974) indicate that risk style interacts with store image in influencing consumers' quality perceptions.

Affect. Affect has been theorized to influence consumers' decision processes (e.g., Isen and Means, 1983; Mackie and Worth, 1989; Schwarz, 2001; Yeung and Wyer, 2004) and, more relevant to this effort, consumers' subjective evaluations, including their perceptions of quality (Compeau, Grewal, and Monroe, 1998; Gardner, 1985, 1987; Laird, 1932). Affective responses to intrinsic product sensory cues, such as color, aroma, and flavor, influence quality perceptions (Adaval, 2001; Laird, 1932). Therefore, we capture this relationship in our model by illustrating how the influence of information cues on product evaluations is moderated by affective responses and propose that

P4c: Consumers' affective responses moderate the effect of information cues on product evaluations.

Evidence. Back in 1932, Laird found that the scent attached to silk stockings influenced women's judgments of quality for those stockings; if the smell was pleasant, their quality perceptions were higher. Compeau, Grewal, and Monroe (1998) also find that affective responses to product sensory cues such as color and aroma (intrinsic cues) influence quality perceptions in the context of food

products—more specifically, ice cream. Moreover, they demonstrate that these affective responses influence cognitive responses of quality perceptions.

Internal Reference Prices (IRP) and Price Fairness

The concepts of IRP and price fairness may be the richest and most important pricing research domain for teasing out a complete theory of consumer price evaluations. Before Martins and Monroe's (1994) formal introduction of the broader concept of price fairness into the pricing literature, research had focused on consumers' comparisons of an IRP with the selling price in their attempts to construct their evaluations of a price offer. The extant research on IRP has demonstrated that consumers form their IRPs and later recall them to judge price offers (Chandrashekaran and Grewal, 2003). This IRP might be in the form of the last price paid, a price expectation, or even a mathematical integration of prior price information. Moreover, it does not have to be a price point but could take the form of a range of acceptable prices (Klein and Oglethorpe, 1987).

More recently, the concept of price judgment has been broadened to the notion of "price fairness," which captures a more holistic notion of the consumer's overall judgment of the price offer (Bolton, Warlop, and Alba, 2003; Campbell, 1999a, 1999b; Martins and Monroe, 1994; Xia, Monroe, and Cox, 2004). Thus, recently, research attention has turned away from IRP and toward the broader concept of price fairness. In this section, we first review the IRP literature to uncover any contributions it may make to our overall understanding of consumer price judgment processes. Then, we integrate this research with more recent price fairness research to illustrate the hierarchical nature of their relationship and continue to develop propositions to guide additional research.

One key issue that we must address is how consumers' IRPs are formed. We define *internal reference price* as a price held in a consumer's memory and used for comparison with other prices (Kamen and Toman, 1970). Reference prices, such as the last price paid, expected price, and estimated market price, are all examples of IRPs (Klein and Oglethorpe, 1987). Furthermore, an IRP may be a specific value or a range of values (Adam, 1958; Gabor and Granger, 1964, 1966; Monroe, 1971; Monroe and Venkatesan, 1969; Stoetzel, 1954) and has a dynamic nature (Monroe, 1973; Rowe and Puto, 1987). That is, as consumers are exposed to more price information, their IRPs may shift. Consumers then use their IRPs to help them categorize a product's price as high or low, acceptable or unacceptable (Monroe and Petroshius, 1981).

Again we turn to Helson's (1964) adaptation-level theory to provide a theoretical framework for understanding the role of IRP in consumers' price evaluations. The three classes of information cues (i.e., focal, contextual, and organic) presented in Helson's theory determine the consumer's reference price, which the consumer uses to judge a price offer (Monroe, 1973; Monroe, Della Bitta, and Downey, 1977). Therefore, relative differences in information cues are important for influencing consumers' judgments of a price offer (Krishnan and Monroe, 1987). We propose that

P5: Focal, contextual, and organic cues affect consumers' internal reference prices.

Evidence. Research has found that several focal cues influence consumers' IRPs. Higher external reference prices have been associated with higher IRPs (Chandrashekaran and Grewal, 2003; Friedman et al., 1982; Grewal, Monroe, and Krishnan, 1998; Lichtenstein and Bearden, 1988, 1989; Lichtenstein, Burton, and Karson, 1991; Urbany and Bearden, 1989; Urbany, Bearden, and Weilbaker, 1988). Internal reference prices (or price expectations) are also influenced by past prices, brand promotion frequency, and the type of store (Kalwani et al., 1990), as well as by product attributes (focal cues) (Ozanne, Brucks, and Grewal, 1991).

In terms of organic cues, Lichtenstein, Bloch, and Black (1988) find that consumers' involvement and price consciousness affect their acceptable price range and IRPs; other research indicates that consumers' knowledge does as well (Fouilhe, 1970; Kosenko and Rahtz, 1988).

The effects of focal extrinsic cues on price fairness are likely to be moderated by contextual and organic cues (similar to our discussion of P3 and P4).

P6: The relationship between extrinsic cues and consumers' perceptions of quality is moderated by contextual and organic cues.

As we have already developed (P2), the consistency of the contextual cues may be important for developing not only perceptions of quality but also IRPs and price judgments. That is, social judgment theory suggests that inconsistent cues may be contrasted and possibly ignored or discounted.

P7: There will be an interaction effect of multiple extrinsic information cues on the formation of an IRP. For example, extrinsic cue 1 and extrinsic cue 2 will interact to influence a consumer's IRP such that the effect of the cues will be stronger when they are consistent (e.g., high price/high warranty yields higher IRP) versus inconsistent (high price/low warranty or low price/high warranty yields lower IRP). When the two extrinsic cues present inconsistent information, the more negative cue will be more salient and dominate evaluations, and its effect will not differ from that of the consistent low levels of the two extrinsic cues (e.g., low price/low warranty).

Related to this line of logic is the notion that inconsistent cues should affect consumers' price judgments. Consistent contextual information cues lead to higher IRPs, which in turn lead to more favorable judgments of the same price (e.g., less expensive, a better deal) compared with the lower IRP judgments generated by inconsistent cues.

P8: There will be an interaction effect of multiple extrinsic information cues on consumers' price judgments. For example, extrinsic cue 1 and extrinsic cue 2 will interact to influence consumers' judgment of a price such that the higher IRP generated by consistent cues (e.g., high price/high warranty) will cause the price judgment to be more favorable than that generated by inconsistent contextual cues (high price/low warranty or low price/high warranty), for which the IRP will be lower.

Evidence. Prior research on the role of multiple extrinsic cues has focused on their effects on quality perceptions (Miyazaki, Grewal, and Goodstein, 2005). The role of these multiple extrinsic cues on IRPs (e.g., estimates of fair price, most acceptable price, average market price) need to be studied further (P7). In a similar vein, research should assess the effects of multiple extrinsic cues on price judgments (P8).

To extend this conceptualization one step further, consumers' price judgments seem to be driven by the level of confidence those consumers have in their IRP. When cues are consistent, consumers should have greater confidence in the veracity of their IRP, because information consistently points in the same direction and thereby provides a strong reinforcing effect. Consumers with strong IRPs are likely to feel confident about using their IRP to make price judgments, which will make them less vulnerable to contextual information in the specific situation. Inconsistent information, however, will work to make consumers unsure about the veracity of their IRP and possibly shift their IRP significantly in response to new information. The net result of this conceptualization is

that consumers should rely more on their IRP when the contextual information used in its formation is consistent compared with when the IRP has been formed with inconsistent contextual information. Thus, at the time of a price judgment, consumers should rely more on their established IRP if they formed it with consistent cues and thus they should be less responsive to the immediate contextual information being offered compared with consumers who have lower confidence in their IRP because it was formed with inconsistent contextual information cues.

P9: The consistency of extrinsic information cues will mediate the impact of IRP on consumers' judgments of price. That is, when the extrinsic information is consistent, consumers will have greater confidence in their IRP and rely on it more to make price judgments. When the extrinsic information is inconsistent, in contrast, it will reduce IRP confidence and motivate consumers to rely more on external information cues at the time of the price judgment.

Evidence. Research is needed to explore this proposition.

Recently, research attention has turned toward price fairness as a broader construct to capture consumers' evaluations of a price offer. Xia, Monroe, and Cox (2004) integrate a review of this literature with theoretical foundations to develop a framework of price fairness. As a result, they proffer several propositions that may identify conditions and variables that can affect price fairness perceptions and thus guide further research. They criticize existing research, however, for not explicitly defining "price fairness" as a concept and argue that price fairness is different from price unfairness. They also integrate affect as an element of price fairness, noting that strong negative emotions can accompany a very unfair price judgment.

The extant research on price fairness also suggests that consumers may use many different reference points to judge the fairness of a price. Nonetheless, in this extension of the literature bringing in the concept of price fairness, IRP still plays a critical role in defining one form of price fairness; that is, is the price fair compared with the consumer's IRP? However, the broader concept of price fairness could also be based on comparisons with what are referred to as "other" IRP points, such as previous prices, competitor prices, and profits (or similarly, consumers' knowledge of the seller's costs) (Bolton, Warlop, and Alba, 2003; Campbell, 1999a; Frey and Pommerehne, 1993; Kahneman, Knetsch, and Thaler, 1986; Kalapurakal, Dickson, and Urbany, 1991; Martins, 1995; Maxwell, 2002). We argue that regardless of the form of the internal reference point, consumers must compare the actual selling price of the product to some internal representation of a price that allows them to attain an appropriate comparison.

Regardless of the reference point used, some processing of information must occur to enable consumers to compare their reference point effectively with the selling price. Consider the scenario in which a consumer knows the seller's cost for the item. In this case, the consumer would determine his or her IRP, at least implicitly, to compare against the actual selling price. If that consumer knew that a store paid $20 for a book and was selling it for $26, he or she would likely judge the degree to which the price was fair or unfair not by simply comparing the cost with the selling price but by determining a "fair" profit, adding it to the seller's cost ($20), and then comparing his or her resulting IRP with the actual selling price ($26). Moreover, we know from research on the psychophysics of price—based on Weber's law and its extension, the Weber-Fechner law—that this judgment will be proportional in nature, not based on absolute dollar amounts. Thus, the fairness of a $26 price for a product that cost the seller $20 will be quite different from the perceived fairness of a $12 price for a product that initially cost $6, even though the profit remains the same at $6. Thus, we propose that

P10: Price fairness judgments involve a comparison of an internal reference price, already stored or constructed at the time of the judgment, with the selling price, regardless of the nature of the reference point used.

Evidence. Further research is needed to explore this proposition.

Consumer Evaluations of Sacrifice and Value

Perceived Monetary Sacrifice

Although the theories of classical economists are inaccurate in the modern marketplace, the view of price as a mechanism for the allocation of products in the marketplace remains appropriate to understand the methods by which consumers evaluate product choices. According to this theory, *perceived monetary sacrifice* is defined as the perceived monetary loss associated with the selling price of a product (Grewal, Monroe, and Krishnan, 1998). Therefore, the higher the selling price of the product, the greater consumers' perceptions of monetary sacrifice.

P11: There is a positive relationship between levels of actual selling price and consumers' perceptions of monetary sacrifice.

Evidence. Grewal, Monroe, and Krishnan (1998) find empirical support for this proposition. More specifically, they find in four different experiments that as the price of a product increases, consumers' perceptions of their monetary sacrifice also increase.

Contextual cues can also affect consumers' perceptions of monetary sacrifice. For example, for a given selling price, buying a high-quality brand may seem like a lower monetary sacrifice than buying a low-quality brand. Thus, we propose that

P12: There is a negative relationship between contextual cues and consumers' perceptions of monetary sacrifice.

Evidence. Baker and colleagues (2002) find that contextual cues (e.g., a store's atmosphere) affect consumers' perceptions of monetary sacrifice. As consumers' perceptions of music (contextual cue) grew more favorable, their perceptions of monetary sacrifice decreased. Interestingly, they also find that well-designed stores are viewed as more expensive (greater monetary sacrifice), which would conflict with P9 and thereby suggest a more complex relationship between contextual cues and monetary sacrifice.

Perceived Nonmonetary Sacrifice

In the marketplace, when consumers evaluate and purchase products, they make various sacrifices other than monetary. These sacrifices may take the form of the time and effort involved in searching, evaluating products, making decisions, and even just thinking (Becker, 1961; Bender, 1964; Shugan, 1980; Stigler, 1961; Verhallen and van Raaij, 1986; Zeithaml, 1988). Hence, *perceived nonmonetary sacrifice* is defined as the perceived nonmonetary costs that consumers have to bear to purchase a particular product. The more positive the contextual cue (e.g., physical surroundings: neatly arranged versus messy store; social surroundings: uncrowded versus crowded store), the lower their perceptions of nonmonetary sacrifice will be.

P13: There is a negative relationship between the level of a contextual cue and consumers' perceived nonmonetary sacrifice.

Evidence. Baker and colleagues (2002) find that as consumers' perceptions of store design (contextual cue) increase, their perceptions of nonmonetary sacrifice decrease. That is, subjects perceive that the time and effort spent to find cards and gifts will be less in a well-designed store. These authors also find that when consumers judge the music played in the store (another contextual cue) more favorably, their perceptions of their nonmonetary sacrifice decrease.

The higher the consumers' perceptions of nonmonetary sacrifice, the higher their perceptions of monetary sacrifice will be as well. Because consumers value their time (Marmorstein, Grewal, and Fishe, 1992), the more time they spend (i.e., the greater their perceived nonmonetary sacrifice), the higher the costs that they associate with the particular transaction (i.e., the greater their perceived monetary sacrifice) will be. Thus, we propose that

P14: There is a positive relationship between the level of consumers' perceived nonmonetary sacrifice and their perceived monetary sacrifice.

Evidence. Research is needed to explore this proposition.

In the next section, we discuss the two dimensions of consumers' perceptions of value: acquisition value and transaction value.

Perceptions of Value

Traditionally, perceptions of value had been conceptualized as the trade-off between the "give" and the "get" components of any transaction, that is, what the consumer gives up to acquire the product and what the consumer gets in return. However, transaction utility theory (Thaler, 1985) suggests two distinct forms of value, this traditional acquisition value and the less obvious transaction value, which is associated with the value of the deal itself.

Acquisition value. Monroe and Krishnan (1985) suggest that the trade-off between the utility of the sacrifice the consumer makes to obtain a product and the utility of the product itself results in consumers' acquisition value (i.e., evaluation of the product). Various research developments offer somewhat similar conceptualizations, such as Keon's (1980) bargain value, Thaler's (1985) acquisition utility, Verhallen and van Raaij's (1986) specific attitude, Szybillo and Jacoby's (1974) perceived worth, and Lichtenstein, Netemeyer, and Burton's (1990) value consciousness. We define consumers' *perceived acquisition value* as their perceptions of the quality and benefits of the product (i.e., what you get) relative to their perceptions of the monetary sacrifice they have made (i.e., what you give up) (for further details, see Zeithaml, 1988).

P15: There is a negative relationship between consumers' perceptions of monetary sacrifice and their perceptions of acquisition value.

P16: There is a positive relationship between consumers' perceptions of quality and their perceptions of acquisition value.

Evidence. Grewal, Monroe, and Krishnan (1998) indicate that as consumers' perceptions of monetary sacrifice increase, their perceptions of acquisition value decrease. Prior research has

consistently demonstrated that as consumers' perceptions of quality increase, their perceptions of acquisition value also increase.

Transaction value. The comparison of a reference price to the actual price could affect consumers' product evaluations (Grewal, Monroe, and Krishnan, 1998; Thaler, 1985). Therefore, the perceived difference between the IRP and the actual price affects consumers' value perceptions, such that relative differences rather than absolute differences are the critical factors.

Thaler's (1985) transaction utility concept has been adapted and termed *perceived transaction value*, defined as the consumer's comparison between his or her IRP and the total perceived sacrifice. If the IRP is greater than the perceived total sacrifice, the price offer provides the consumer with a positive transaction value (i.e., a deal). On the basis of this concept, we suggest the following propositions:

P17: There is a positive relationship between consumers' internal reference prices and their perceptions of transaction value.

P18: There is a negative relationship between consumers' perceptions of monetary sacrifice and their perceptions of transaction value.

Evidence. Initial research by Grewal, Monroe, and Krishnan (1998) offers some support for P17 and P18, but additional research is needed to confirm these relationships.

A related but unexplored area is the role of other value dimensions. Parasuraman and Grewal (2000) have suggested that in addition to acquisition and transaction value, researchers should explore the role of in-use value and residual, or end-of-life, value perceptions. *In-use value* refers to "the utility derived from using the product or service," whereas *residual value* is "the residual benefit at the time of trade-in or end-of-life (for products) or termination (for services)" (Parasuraman and Grewal, 2000, p. 169). It is important to understand the role of information cues, quality perceptions, and sacrifice perceptions on these two value dimensions. We might expect that information cues that signal high quality are likely to signal greater residual value. It is quite common, for example, to see cars viewed as high in quality retain their high blue book value—or residual value—after many years.

Behavioral Intentions

These consumer evaluations should influence both purchase intentions and search intentions, the behavioral elements of our model.

Willingness to Buy

A consumer's *willingness to buy* is defined as the likelihood that the consumer intends to purchase the product (Dodds and Monroe, 1985). Consumers' perceptions of value have a positive impact on their willingness to buy a product (Zeithaml, 1988), such that a link exists between product evaluations (perceived value) and behavioral intentions (willingness to buy). Thus, we propose that

P19: There is a positive relationship between consumers' perceived value and their willingness to buy the product.

Evidence. This proposition has been supported empirically (Baker et al., 2002; Dodds, Monroe, and Grewal, 1991; Grewal, Monroe, and Krishnan, 1998; Szybillo and Jacoby, 1974).

Price Search Intentions

The uncertainty of the marketplace affects consumers' product choices primarily because prices of products are constantly changing; therefore, consumers cannot be aware of all prices (Stigler, 1961). Consumers reduce this uncertainty by obtaining information from sellers to ascertain the lowest possible price. We define consumers' *search intentions* for price information as the likelihood that consumers intend to seek out a lower price. Stigler (1961) conceptualizes consumers' search for additional price information as contingent on the trade-off between the costs and benefits of the search. Benefits of search include finding the lowest price, increasing savings (Urbany, 1986), and enhancing perceived value (Urbany, Bearden, and Weilbaker, 1988). A perceived value enhancement reduces the chance of finding the product at a lower price, which in turn reduces consumers' search intentions. Therefore,

P20: There is a negative relationship between consumers' perceived value and consumers' search intention.

Evidence. This proposition is empirically supported by Grewal, Monroe, and Krishnan (1998), whose results from two studies support the negative effects of perceived acquisition value on search intentions. One of their two studies also supports the negative effect of perceived transaction value on search intentions.

Implications

The previously discussed issues and propositions contribute to marketing knowledge by suggesting a conceptual model that helps explain the effects of information cues on consumers' decision processes. An understanding of that which influences consumers' product valuations and behavioral intentions is of vital importance to marketers. Such information can help improve the effectiveness of the commonly used strategies associated with product planning, design, promotion, and pricing. In addition, several important implications for manufacturers and retailers may facilitate the efficient and effective management of information cues. We discuss the research and managerial implications of this conceptualization next.

Research Implications

Conceptual Model

The 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. Furthermore, it links the effects of price, reference price, and other relevant information cues on consumers' product evaluations and behavioral intentions. We offer several theoretical propositions to aid further research. Some of these propositions have received empirical support, but many have not been tested. It is therefore critical for knowledge development that the research be conducted in a programmatic fashion (Monroe and Dodds, 1988). Additional research must examine these propositions and empirically test the conceptual model.

Contextual Cues

Initial research on contextual cues indicates that they may increase consumers' perceptions of quality and reduce their perceptions of nonmonetary sacrifice. However, research has not examined the effects of contextual or atmospheric cues on consumers' IRPs. Further research should examine the effects of contextual cues and how they may interact with focal cues to influence consumers' decision processes.

Formation of Internal Reference Price

The conceptualization offered herein provides a framework for further research to examine how IRPs are formed. Furthermore, we have discussed the effects of IRP, whether as a specific value or a range of prices, on consumers' perceptions of value. However, the way in which the IRP is operationalized may affect consumers' perceptions of value; this issue needs to be addressed.

Effects of Reference Price Advertisements

How reference price advertisements and product cues affect consumers' perceptions of their nonmonetary sacrifice and value is an important issue that must be researched. An associated issue—namely, how the two value constructs (acquisition and transaction value) should be weighted in terms of their effects on consumers' perceptions of value and behavioral intentions—also should be addressed. Moreover, the way in which a price reduction (reference price advertisement) is framed could affect consumers' product evaluations and choices significantly (Compeau et al., 2004; Monroe, 1987). Price-promotional frames may include semantic phrases and comparison cues, affect consumers' perceptions of quality and IRPs, and thus influence their perceptions of acquisition value, transaction value, and perceived value, as well as their willingness to buy and search intentions. (The specific paths can be traced by examining the conceptual model.) Research therefore needs to address these propositions.

Managerial Implications

For those elements of the model that have already received empirical support, we can draw out some key managerial implications of understanding what influences consumers' product valuations and behavioral intentions.

Managing the Price Cue

Such research is important to practitioners because it offers a conceptual understanding of how the price cues provided by manufacturers and retailers affect consumers' subjective evaluations of products. Price is the only marketing mix variable that is directly linked to revenue, so pricing decisions that are made without considering the psychological influences of price on consumers' product evaluations could develop major errors. This research suggests that consumers' perceptions of acquisition value are influenced by the trade-off between the costs and benefits of the product acquisition. As the price of a product increases, consumers' perceptions of quality—and indirectly of benefits—increase, which enhances their perceptions of the acquisition value. At some point, the price increase will reduce the acquisition value and result in a decline in consumers' willingness to buy the product. Many manufacturers price their products using a cost-plus-pricing method, with

the belief that, as price increases, demand falls; these marketers are ignoring the psychological influences of price within the market. In many cases, as the price of the product increases, demand also increases because consumers perceive that the product has better quality. Manufacturers and retailers therefore need to price their products so that they fall in line with customer perceptions and acceptable price ranges.

Identifying Critical Information Cues

Manufacturers must focus on information cues that enhance consumers' value perceptions. Thus, employing multiple information cues to provide a consistently positive image may enhance consumers' product evaluations, and, in the long run, help promote a positive brand image and brand equity. Another important implication of this research is that it suggests that consumers' perceptions of benefits may be influenced by intrinsic attributes other than those that affect quality perceptions. For example, high nutrition value in a fruit juice may influence consumers' perceptions of quality and indirectly their perceptions of benefits. In contrast, a fruit juice with the same nutritional content (intrinsic cue) but that contains more pulp may be perceived by the consumer to be of greater value because the fruit pulp (intrinsic attribute) provides the consumer with certain added psychological benefits and thus enhances their value perceptions.

Recognizing Nonmonetary Costs

Recognizing that consumers must bear costs other than financial ones is important. Such nonmonetary costs may reduce consumers' perceptions of the value of the product. Providing critical information in promotions and advertisements (e.g., comparative prices, product attributes) may reduce the consumers' search and effort costs and thereby enhance their value perceptions of the advertised product.

Enhancing Product Value

The value of the product offer can be augmented in several ways. Our model suggests that the perceived value of the product/price offer can be increased through an enhancement of the acquisition value, the transaction value, or both. Perceived acquisition value results from the comparison between the cost of the product and the bundle of benefits the consumer is evaluating; thus, it may be enhanced by increasing the quality and benefits of the product and/or reducing the costs. Transaction value can be intensified by providing consumers with a better deal (i.e., more savings).

Summary

The marketplace consumers face today when making everyday purchase decisions necessitates various techniques by those consumers to reduce its inherent uncertainty and risk. Marketers need to understand these techniques so that they may gain insights into how consumers make product choices. This chapter provides a review of the conceptual developments that pertain to the effects of price information, in the broader context of information cues, on consumers' product evaluations. We have synthesized the results from prior research to develop a comprehensive model that examines the effects of price, reference price, and other information cues on product evaluations and behavioral intentions. In addition, this conceptualization offers a framework to examine the effects of framing the price offer, price decreases, and price increases on consumers' product evalu-

ations and behavioral intentions. Throughout, we have developed many theoretical propositions and discussed the empirical evidence in the literature that relates to these propositions. Many of our propositions have either not been tested or been tested by only a few researchers. Therefore, these propositions offer various diverse avenues for further research.

Notes

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1. Price, from the buyers' perspective, may serve as an indicator of the monetary resources that must be forfeited to acquire a product. Such stimuli or cues must be perceived before they can affect the buyers' product evaluation process (Jacoby and Olson, 1977).

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Chapter 5

STORE BRANDS

From Back to the Future

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Abstract

Store brands or private labels are owned and controlled by retailers. In this chapter, we place the research on store brands into perspective and highlight some issues that need further investigation. Researchers' interest regarding store brands can be clustered around five major issues. (1) The role of store brands; why do retailers introduce store brands? The explanations include gaining higher margins from store brands, reaching the price-sensitive segment, increasing store loyalty, and attaining better terms of trade from national brand manufacturers. (2) Store brand buyers: characteristics and profitability to the retailer. (3) The relationship among store brand and national brand prices and demands; strategic interaction among the manufacturer and the retailer, the nature of competition between store brands and national brands. (4) The retailer's decision regarding store brand characteristics, quality, and positioning; how do consumers perceive store brands? (5) Drivers of store brand success, in terms of product category, retailer, and industry variables.

Store brands, also called private labels or own brands, are brands created and controlled by retailers. Representing value to consumers, differentiating retailers through exclusive ownership, and transforming the retailer into a competitor for national brands, store brands constitute a fruitful avenue for researchers.

Store brands are described as "products [that] encompass all merchandise sold under a retailer's brand. That brand can be the retailer's own name or a name created exclusively by that retailer. In some cases, a retailer may belong to a wholesale group that owns the brands that are available only to the members of the group" (*PLMA International*, 2005).[1] Store brand grocery products have a unit market share of about 20 percent in the United States, and they are among the top three brands in 70 percent of the categories (Information Resources, Inc. [IRI], 1998). The focus is often on grocery products because information for other product categories is not as widely available. The dollar share of store brands in apparel is about 35 percent (cf. Steiner, 2004). Moreover, store brands seem to be growing in terms of share and their introduction into new categories. In a study covering 225 consumer packaged goods categories, Hoch, Montgomery, and Park (2003) found that store brands gained share in 86 percent of these categories between 1987 and 1994. Sayman and Raju (2004a), examining data from 13 categories and 122 retailers, note that the number of store brands increased between 1993 and 1995. In Europe, store brands are stronger; for example, their share grew from 16 percent to 30 percent between 1975 and 1997 in the United Kingdom (cf. Steiner, 2004).

In this chapter we review the research on store brands. This review focuses on integrating research in the following areas.

1. Why do retailers introduce store brands?
2. Who buys store brands?
3. What is the nature of price competition between store brands and national brands?
4. How are store brands positioned and perceived relative to national brands?
5. What are the drivers of store brand success?

A number of other aspects of research on store brands are not included in this review, but the five areas noted above have received the most attention from researchers. Our objective in this chapter is to review the research in each of these areas, integrate the findings, and identify directions for future research.

1. Why Do Retailers Introduce Store Brands?

In a survey about a decade ago, retailers stated that the most important reason for carrying a store brand is to gain better profit margins (*Discount Merchandiser*, 1996). In fact, (other) benefits of store brands as discussed in the literature also hinge on the retail prices and margins of these brands vis-à-vis the national brands. Dhar and Hoch (1997) report that national brands are on average priced 40 percent higher than store brands. Their data set covers 34 categories of food sold in 106 supermarket chains in the United States. Similarly, Ailawadi, Lehmann, and Neslin's (2003) analysis suggests that the leading national brand is almost always priced higher than the store brand. On the other hand, it is argued that store brand grocery products often have prices similar to those of national brands in the United Kingdom (cf. Corstjens and Lal, 2000).

Indications about the relative retail margins are more diverse. Drawing on evidence from Steiner (1993, 2000) and other studies (e.g., Barsky et al., 2001), Steiner (2004) notes that store brands have far higher percentage retail gross margins than the leading national brands, and in fact presents this as a robust regularity. Corstjens and Lal (2000) argue that although percentage margins tend to be higher, dollar margins may be lower for store brands. Their illustration of a beverage category (from a Canadian retailer) indicates that when all factors (deal allowances, warehousing, in-store labor, etc.) are taken into account, net percentage margins from store brands may be lower than margins from national brands. They argue that retailers should also consider the turnover, or returns on shelf space, and suggest that it is slower for store brands. Earlier, Beck (1967) noted that net margins from store brands were lower in two categories but higher in another category. Ailawadi and Harlam (2004) examine data from two retailers and a large number of categories. Their results indicate that both gross and net margins are higher for store brands than for national brands. However, the dollar margin from store brands is likely to be smaller than from national brands—these data were available for only one retailer.

Two explanations may account for the higher margins from store brands—at least for the percentage margins. First, the general thinking is that store brand manufacturers do not have much market power, and their wholesale prices are close to marginal costs; therefore, retailers can charge lower prices but still make good margins. Barsky and colleagues (2001) argue that the marginal costs of national and store brands should be similar, and the store brand wholesale price is an upper bound for the marginal manufacturing cost of the national brand. They present a comprehensive discussion of the factors (such as quality, economies of scale, labor, promotions, etc.) that may influence the discrepancy between the costs of national and store brands. A second mechanism

may be as follows. Brand equity of the (leading) national brands implies that retailers ubiquitously carry them, and competition among dealers decreases the retailer margins (Lal and Narasimhan, 1996; Steiner, 2004). On the other hand, the store brand is proprietary to the retailer and consumers cannot make direct price comparisons across retailers. Thus, retailers have room to increase margins from store brands, thereby raising profits (Steiner, 2004). Obviously, the quality and price of national brands should be considered when deciding on the store brand margin/price.

If margins from store brands are higher than from national brands, retailers are better off diverting consumers to store brands. Otherwise, there should be other benefits or expectations from store brands. A second explanation is that retailers introduce store brands for the price-sensitive segment. Store brands are perceived as lower-quality (Bellizzi et al., 1981), cheaper alternatives to national brands, and the demand for the store brands is heavily affected by consumer purchasing power (Hoch and Banerji, 1993). This argument implies price discrimination. In a theoretical paper, Wolinsky (1987) argues that the seller sorts out buyers such that buyers with strong brand name preference are charged a higher price and the remaining buyers are charged a lower price via unlabeled or store brand products. In his model, buyers are imperfectly informed about the comparable quality of national and store brands. However, this segmentation/targeting could be achieved with a lower-quality, lower-priced national brand as well (Scott Morton and Zettelmeyer, 2004; Wolinsky, 1987). The difference is that margins from the store brand may be higher.

A third explanation is that store brands enable retailers to get better deals from national brand manufacturers. Beck (1967) notes that store brands are (also) used as leverage in negotiating wholesale prices. Steiner (2004) argues that a strong store brand enables the retailer to obtain lower prices from both the store brand supplier and the leading national brands. He cites the 1979 case in which A&P's Chicago division used its store brand milk to receive big discounts from the competing national brand.

Mills (1995) interprets store brands as instruments for more power in the distribution channel. In his model, the threat, or actual introduction, of a store brand allows the retailer to extract a lower wholesale price from the national brand manufacturer. The retail price of the national brand is also lowered, but to a lesser extent. As a result, the retailer's margin from the national brand increases. The other benefit to the retailer is that when the store brand quality is high and the national brand manufacturer cannot deter its entry, part of the sales are diverted to the store brand, which is purchased at a lower wholesale price. In a related model, Bontems, Monier-Dilhan, and Requillart (1999) allowed the national and store brand marginal costs of production to differ. Although the mechanism remains the same, the entry and deterrence results contrast with those of Mills (1995).

Raju, Sethuraman, and Dhar (1995a) point out that the introduction of a store brand decreases the retailer's profit and margin from the national brands because of increased competition in the product category. Using a game-theoretic model, they show that retailers should introduce store brands only in those categories where the reduction in profits and margins from national brands is compensated by the additional earnings from the store brand.

A related question is whether or not the store brand has to be introduced (or gain share) for better trade terms. In Narasimhan and Wilcox (1998), the store brand entrant challenges the national brand manufacturer by way of the share that it could attain, rather than its actual share. When this threat is large enough, the national brand lowers its wholesale price and the retailer in return diverts a smaller portion of the sales to the store brand. Hence, there is a negative relationship between store brand share and retail margin from the national brand. Their empirical analysis of 110 categories indicates that this may well be the case, especially in categories with low perceived risk (by consumers) and a quality store brand. Scott Morton and Zettelmeyer (2004) cite the same

reasoning; in their bargaining game, the store brand is positioned strategically to target the leading national brand in order to obtain better supply terms. Their analysis of IRI scanner data from 82 categories provides indirect evidence: retailers are likely to introduce store brands where the leading national brand was previously stronger. The idea is that the higher the share of the national brand, the more benefits from negotiations in the future when the store brand is introduced. Ailawadi and Harlam (2004) argue that threats of entry or share gain may not be credible. Their analysis indicates that national brand retail margins and store brand share are in fact positively related. We will further discuss the national brands' price response in section 3.

Another reason for introducing store brands is that they can potentially enhance store loyalty. Corstjens and Lal (2000) argue that a store brand of acceptable quality can attract customers, and then brand inertia enables them to charge higher prices later. This mechanism may work even if there is no cost advantage of the store brand. Their retailer-level data from the United Kingdom suggest that store brand penetration is positively related to store loyalty and profitability (percentage of sales) of the store. Similarly household-level data from the United States and Canada provide evidence that loyalty (as measured by the share of expenditures from the store) increases with increasing household-level store brand penetration. Sudhir and Talukdar (2004) offer similar evidence. Their analysis of household expenditures in forty-four product categories from a large retailer suggests that a household buying store brands in more categories is likely to spend more on any particular category. Hence, the propensity to buy store brands increases the store's share-of-wallet. In other words, store brands serve as a point of differentiation and can improve store loyalty. In fact, store brands may lead to a decrease in store revenues because of lower prices, while increased profit is due to higher margins. Uncles and Ellis (1989), on the other hand, offer evidence that loyalty to store brands is slightly above average, and they question the role of store brands in store loyalty and differentiation. Similarly, Richardson (1997) finds no evidence of store brand differentiation in five product categories; subjects regarded the quality of store brands of two chains as comparable.

A related explanation is that retailers can use store brands to deter competitive entry or enable exit. In the model of Akcura, Bezawada, and Kalra (2005), a store brand introduced by the incumbent retailer captures some consumers and increases their price sensitivity. This reduces the size of the market for the national brand product, making entry less profitable for a new retailer that cannot offer a store brand. This can also reduce the incumbent retailer's profits; but profits with a store brand will be higher than without it if the competition enters. Their empirical findings comply with the basic prediction of the theoretical model.

In addition to the above benefits, expanding the store brand into more categories may bring additional advantages. Besides helping cover the fixed costs of a store brand program and differentiating from other stores, extension may create an "umbrella" effect. Using data from 13 food categories and 122 U.S. retailers, Sayman and Raju (2004a) offer evidence that the number and sales of store brands in other product categories increase the sales of the store brand in the target category. This may explain the store brand share-maximization objective of retailers and the lower than profit-maximizing prices for store brands (Chintagunta, 2002). Similarly, Sudhir and Talukdar (2004) suggest that a broader store brand line may be necessary to create loyalty and differentiation.

2. Who Buys Store Brands?

This question has been asked starting with early store brand research (e.g., Myers, 1967). The characteristics of store brand buyers are examined by means of linking these either to self-reported

measures or to sales data. Bellizzi and colleagues (1981) conducted personal interviews with 125 participants and found that store brands were rated lower than national brands on quality, appearance, and attractiveness, but were perceived as a good value. However, store brand buyers and nonbuyers were not significantly different in terms of self-reported behavioral variables (store loyalty, use of coupons, promotions, etc.), except that national brand buyers tended to be more brand loyal and were more influenced by advertising. Richardson, Dick, and Jain (1994) collected data from 1,500 shoppers and found that willingness to buy store brands is related more to perceived quality than to perceived value for the money. Dick, Jain, and Richardson (1995), again using a large sample, report that store brand buyers tend to be middle-income households, not older, and belong to larger families.

Sethuraman and Cole (1999) examined the factors influencing consumers' willingness to pay premiums for national brands over store brands. Their survey data from 131 buyers regarding several categories indicate that the perceived quality differential between national and store brands is the most important factor. Demographics account for only 5 percent of the variation: middle-income, older, and male consumers are willing to pay smaller premiums. Interestingly, in about 40 percent of the observations consumers perceive store brands to be equal or higher in quality to national brands, but in only 7 percent of the cases are they willing to pay the same or a higher price for the store brand.

Hoch (1996) examined how store brand share and store-level price elasticity vary with demographic and retail competition variables. His data involve fourteen categories and the trading areas of eighty-six stores. Trading areas with more elderly people, larger families, and bigger ethnic groups tend to be more price sensitive and purchase more store brands. Interestingly, higher education is associated with higher store brand share but lower price sensitivity. Educated buyers are found to be less brand loyal (Cunningham, Hardy, and Imperia, 1982); and it is possible that they are more informed about the comparable qualities of national and store brands. Scott Morton and Zettelmeyer (2004) report that retailers operating in areas with larger families and higher income carry fewer store brands. Nonwhites, older residents, and higher occupational categories (education) encourage stores to stock store brands. Baltas (2003), using U.K. panel data for one product category, finds that higher social status is associated with store brand purchase. The Dhar and Hoch (1997) study mentioned above combines store and demographic data, and finds that store brands are sold more to less wealthy and older consumers. In addition, low-quality store brands tend to sell more in areas where there are larger ethnic minorities. But these variables do not account for much variation.

Overall, it appears that store brand buyers are price and quality sensitive, but not image/advertising sensitive, and they have higher perceptions of store brand quality. Store brand buyers have middle income, higher education, and belong to larger families. Evidence regarding age is more diverse; if anything, store brand buyers tend to be older. In any case, demographics do not seem to be good predictors of store brand buying, and store brand buyers can be associated with a range of demographics. This is in fact an opportunity for retailers. For instance, low-income consumers may be attracted to store brands through being informed about the quality of these products (Sethuraman and Cole, 1999).

One question of interest is whether users of national brand promotions and store brands are the same consumers. Ailawadi, Neslin, and Gedenk (2001) find that national brand deal users and store brand buyers entail different psychographics. In particular, out-of-store promotions (coupons, flyers, etc., which involve active consideration and planning) are associated with hedonic benefits such as enjoying shopping, and store brand usage is related to economic benefits and cost-related characteristics. Demographics, on the other hand, do not influence these behaviors directly, but

rather indirectly through psychographics; age, gender, and education seem to be the most relevant variables. These authors also find four distinct segments of shoppers: deal focused, store brand focused, deal and store brand users, and nonusers.

Baltas (1997, 2003) and Ailawadi, Gedenk, and Neslin (2003) find that store brand usage is negatively related to national brand deal usage. Ailawadi, Gedenk, and Neslin (2003) interviewed 319 shoppers in malls to compare their attitudes toward store brand usage and national brand deal usage. They found that store brands are rated higher in terms of savings than are deals for national brands, but lower in quality. Purchasing store brands is considered a fun and smart thing to do, as well as a good way to try new products. Burton and colleagues (1998) suggest that although store brand attitude and deal proneness may be positively related, store brand buyers make fewer deal-based purchases; it seems that consumers choose either one or the other. Along the same lines, Srinivasan and colleagues (2004) found lower promotional gains of national brands in high store brand share categories.

Recent research provides evidence regarding the value of store brand buyers to the retailer. Sudhir and Talukdar (2004) report that consumers who buy more store brands and buy them in more categories are more profitable than national brand buyers. Furthermore, buying the store brand does not make consumers price sensitive. Similar findings are presented by Bonfrer and Chintagunta (2004). Their data, consisting of 104 product categories from five grocery retailers, indicate that store loyalty is positively related to willingness to buy store brands and negatively related to brand loyalty. Ailawadi, Neslin, and Gedenk (2001) use a structural model involving self-reported measures, and arrive at essentially the same finding. Earlier, Rao (1969) analyzed purchase records for coffee and found that loyalty to a particular store is positively associated with patronage of that retailer's store brand. A more recent paper by Baltas (2003) confirms this positive association.

Ailawadi and Harlam (2004) further differentiate between heavy users of store brands and light users, finding that light users contribute more to store profits, but heavy users contribute even less than nonusers of store brands. They note that heavy users of store brands may have heavier financial constraints and smaller purchase requirements, and they shop at multiple stores. It is possible that (linear) models or correlation-based analyses used in other studies overlook this heavy store brand segment. More evidence is needed regarding the usage–profitability link.

3. What Is the Nature of Price Competition Between Store Brands and National Brands?

A number of studies examine the relationships between the demands for store and national brands and their prices. In some sense, we consider here the power of these brands against each other.

An important consideration in competitive effects is whether one looks at within-category time series (demand) or cross-category (price reaction) data. An increase in a brand's relative price in the short term would naturally decrease its share. And store brand is no different in this respect. For instance, Hoch (1996) reports experiments in which changing the price gap between the national brand and the store brand affects sales of these products. Cotterill, Putsis, and Dhar (2000) use a framework that allows estimation of demand-side interactions from cross-category data. Their analysis indicates that national brand share is negatively related to the national brand price and positively related to the store brand price. Similarly, store brand share is negatively related to the store brand price and positively related to the national brand price.

However, across categories, stronger or higher share brands can charge relatively higher prices. The ability to do so is suitably called market power. Raju, Sethuraman, and Dhar's (1995b) analysis

shows that although within a category store brand share will increase as the difference between the store brand and national brand prices increases, one can observe an inverse relationship across categories.[2] The intuition is that in categories where store brands are more successful, the retailer can divert the sales to the store brand even with a small price differential. Hence, it has room to raise the price of the store brand while still getting a large store brand share. This argument is consistent with the supply-side or market-power story. Similarly, the analysis of Mills (1995) implies that across product categories store brand share varies inversely with the relative price difference between the national brand and the store brand. This is because both the wholesale and retail prices of the national brand decrease with increasing store brand share.

Regarding the empirical evidence, Putsis (1997) analyzed data from 135 food products and found that higher store brand share was associated with higher store brand price. Similarly higher national brand share was related to higher national brand price. As has been done in many other studies, he combines national brands into an omnibus national brand; hence, higher national brand share means lower store brand share. He argues that higher store brand share is a result of store brand quality, and, in response, the national brand decreases its price.

However, evidence regarding the store brand price–share link is not unequivocal. Cross-categorical analysis of Hoch and Banerji (1993) suggests that the relationship between the store brand share and the national brand–store brand price difference is not significant. In a study that links advertising to brand prices, Wills and Mueller (1989) analyzed 133 brands in the food manufacturing industry. They found that across categories national brand retail prices were positively related to their market shares and negatively related to the store brand share. Store brand retail price, on the other hand, was negatively related to its market share. Cotterill and Putsis (2000) estimate demand and price equations simultaneously using data from 143 categories. In their analysis, national brands and store brands are "aggregate" brands. They too find that the store brand price increases with decreasing share. The explanation is that higher national brand share (lower store brand share) enables the national brand to raise prices, which in turn increases the ability of the store brand to raise prices. Further evidence comes from Cotterill, Putsis, and Dhar (2000), who find that the effect of store brand share on store brand price is insignificant.

Some empirical studies involve cross-retailer analysis. For example, Dhar and Hoch (1997) examine store brand share across retailers for thirty-four categories, and then pool the results from these categories. In a cross-retailer comparison, there are two dimensions. To the extent that store brands of different retailers are similar but with different pricing strategies, it resembles a time-series analysis. On the other hand, variation in the strength of store brands of different retailers may indicate a cross-categorical relationship. Therefore, a cross-retailer analysis may reveal which is the dominating factor. In their cross-retailer analysis, Dhar and Hoch (1997) find that national brand–store brand price differential has a positive impact on store brand share—a relationship expected within a category.

The empirical studies cited above suggest that store brands do not possess market power to the extent that national brands do. Yet, the price of store brands relative to the national brands has an impact on the store brand share. Furthermore, competitive interactions are more than demand–price associations. For example, Cotterill and Putsis (2000) find that an increase in national brand price elicits an increase in store brand price—the opposite being weaker. (See also Cotterill, Putsis, and Dhar, 2000.)

A. Price Response of National Brands

Several research studies specifically examine the price response of national brand in the wake of store brand entry or share gains. Share-price associations inferred from cross-categorical studies

offer some evidence of such responses. Here we will examine more direct analyses of the issue. In doing so, we need to separate out the wholesale price reactions of national brands and the corresponding retail prices. In the cross-categorical study mentioned above, Wills and Mueller (1989) found that the retail prices of national brands were negatively related to the store brand share. This may imply that national brands charge lower prices in categories where store brands are stronger. They also analyzed wholesale prices (available for seventy-four products); the effect of store brand share was not significant.

Steiner (2004) cites numerous cases where national brands decreased prices against store brands. He notes, for instance, that substantial cuts in the prices of dishwashing detergents by P&G in the 1960s were mainly against the share gains of store brands. In a more recent example, in the 1990s national brands of cereal decreased prices significantly to recapture share from store brands. In a more striking example, in the 1980s national brand incandescent light bulbs were selling for about twice the retail price in markets where no store brands were introduced. Scott Morton and Zettelmeyer (2004, p. 162) cite another anecdote about Coca-Cola, which significantly lowered its wholesale price due to aggressive shelf placement of a large chain's store brand.

Theoretical models by and large indicate that national brands decrease wholesale prices. For example, in Lee and Staelin (2000), retail prices of national brands do not decrease but wholesale prices do. In a contrasting study, Gabrielsen and Sorgard (2000) consider two groups of buyers; one group is loyal to the national brand (as long as the price is lower than a threshold level), and the second group may switch to the store brand if available. Hence, part of the demand is elastic. They find that when the size of the loyal segment is sufficiently large, the wholesale and retail price of the national brand increases when a store brand is introduced; the national brand manufacturer focuses on the loyal segment. Ward and colleagues (2002, p. 964) discuss some possible explanations that allow for price increases in response to store brand entry.

Chintagunta, Bonfrer, and Song (2002) examined the wholesale and retail prices after store brand entry in two categories of a retailer. Both prices decreased for the major incumbent brand in the oats category, but the margin did not change significantly. In the refrigerated pasta category, the retail or wholesale price increased for some national brands. Pauwels and Srinivasan (2004) offer evidence from four categories of a chain, demonstrating that store brand entry raises the retailer's margin from the national brands. Retail prices fall only for some second-tier brands. Premium brands are able to maintain or increase market share, often with higher wholesale and retail prices.

Ward and colleagues (2002) use time-series data for thirty-four products spanning from 1996 to 1999—where the aggregate store brand share increased. They find that an increase in store brand share is associated with higher national brand prices and a lower store brand price. Their analysis takes into account possible endogeneity (higher national prices may be increasing the demand for store brands). Interestingly, their analysis indicates that national brands also reduce promotions and item proliferation—contrary to some beliefs or suggestions appearing in the academic or popular press.

Bonfrer and Chintagunta (2004) argue that store brands may lead to higher or lower national brand prices. The store brand may increase competition in the category and hence lower retail prices, or if the retailer positions the store brand for the price-sensitive segment, the retailer may raise the prices of the national brands (see also Dunne and Narasimhan, 1999). They analyze store and household-level data from 104 product categories, finding that after a national brand entrance category, prices tend to fall. On the other hand, when a store brand enters, incumbents' prices increase in about half of the categories—particularly in categories where there is no dominant brand. To the extent that the retailer can still attract national brand buyers to the store, higher national brand prices are another benefit of the store brand.

B. Asymmetric and Brand-Specific Price Effects

Blattberg and Wisniewski (1989) estimated cross-price elasticities in four categories in which there are price/quality tiers. There is evidence that brands steal sales from their own tier or the tier below. However, lower-tier brands (or store brands) do not steal sales from the tiers above. In other words, cross-price elasticities are not symmetric. They explain this asymmetry with a choice model in which preferences are heterogeneous and conform to a bimodal distribution. Kamakura and Russell (1989) also observed the asymmetry between the store brand and national brands in the detergent category.

Allenby and Rossi (1991) explain the asymmetry with a model of preference shift due to income effect of the price reduction. In their model, when a high-quality brand lowers its price, it induces substitution from the lower-quality brands and the income effect works in the same direction. On the other hand, when a lower-quality brand lowers price, although it too will induce substitution from high-quality brands, the income effect will be in the opposite direction. As such, the effect on high-quality brands will be less than the other way around.

Several studies have examined asymmetry in more detail. For instance, Baltas, Doyle, and Dyson (1997) analyzed data from one category and reported that the national brand cross-price effect on the store brand market share was highest for the category leader. Conversely, store brand price affected national brands equally. Sivakumar and Raj (1997) extended the analysis into price increases as well as category choice (whether to buy). Their findings from four categories indicate that national brands are also less vulnerable to price increases; and national brand price promotions accelerate purchases more than store brand promotions do.

Abe (1998) went a step further to examine the likelihood of alternative explanations to asymmetric effects. His analyses support neither the heterogeneity of preferences (exemplified by Blattberg and Wisniewski, 1989) nor the income-effect (Allenby and Rossi, 1991) explanations—using data from two and four product categories, respectively. He points to a third explanation: loss aversion (Hardie, Johnson, and Fader, 1993).

Although evidence for asymmetry is extensive (e.g., Cotterill, Putsis, and Dhar's [2000] analysis pools data from 125 categories), there is counterevidence as well. Sethuraman (1995) estimated elasticities in six categories from three grocery chains. He found that cross-price effects on average did not differ significantly. However, the effect of store brand price on national brand demand exhibits some variation: high share national brands are influenced less often than the lower-priced national brands. Bronnenberg and Wathieu (1996) linked the asymmetric effects to brand positioning in the quality–price space. Their theoretical framework and empirical analysis suggest that asymmetric effects favor high price/quality brand only if the quality difference between the brands is sufficiently large. Consistent with their expectations, in the case of orange juice the usual asymmetry prevails; however, in the case of peanut butter an opposite asymmetry holds.

Sayman, Hoch, and Raju (2002) offer further evidence. Their cross-elasticity estimates suggest asymmetric effects in nine categories with lower-quality store brands, while in ten categories with higher-quality store brands, asymmetry disappears. In fact, when absolute cross-price effects are considered (see below), asymmetric effects are much smaller for lower-quality store brands.

One criticism of the studies reporting asymmetric effects is that they predominantly use elasticity as a measure of cross-price effects. Sethuraman, Srinivasan, and Kim (1999) explain that this measure tends to favor the higher-priced brands. A dollar change in price is smaller in percentage terms for a high-priced national brand than for the store brand. They define and use an absolute measure of cross-price effect: the change in share percentage points due to a change in the focal brand's price by 1 percent of the product category price. They estimated 1,060 cross-price effects

from 19 categories: asymmetry holds with cross-price elasticities but it tends to disappear with absolute effects as the measure. However, the neighborhood price effect (brands with similar prices have larger cross-price effects) holds with both measures. Sethuraman and Srinivasan (2002) show that asymmetry can be further intensified if the store brand has a smaller share than the national brand—because a given percentage point change in the market share would loom larger in relative terms for the store brand.

Although many studies group national brands into one product or assume that they are equivalent or symmetric, some have acknowledged the differences among national brands. In one of these studies, Hoch (1996) conducted in-store experiments in which prices of national brands and store brands were modified in eighteen categories in eighty-six stores of a particular grocery chain. In ten categories where there are clear leader and follower brands, he found that the price difference between the store brand and the national brand had a much larger effect on the secondary brand than on the leader. Quelch and Harding (1996) note that in fourteen out of twenty-four categories (in which a manufacturer operates), store brands gained share at the expense of the weaker national brand.

In short, it seems that asymmetric effects may be less relevant as store brands improve in quality. And employing other measures of competitive clout (e.g., absolute cross-price effect) invalidates the existence of such effects in the first place. It still holds that store brand affects different national brands differently; this is closely related to the store brand positioning and perceptions.

4. How Are Store Brands Positioned and Perceived Relative to National Brands?

Store brands were historically considered as cheaper imitations of branded products (Braithwaite, 1928). Now there are premium store brands such as the President's Choice line of Loblaws. Researchers have examined both buyers' perceptions and the objective quality of store brands. Hoch and Banerji (1993) administered a survey to quality managers from channel members regarding 210 grocery product categories. Managers rated the quality levels of best store brands as close to, but lower than, the quality of leading national brands. In addition, there was some degree of variation in the quality of store brands of a category.

Underlying this improvement in quality are the higher standards and consistent quality requirements imposed by the retailers upon the store brand manufacturers. High-quality store brands facilitate benefits such as enhanced loyalty and image. Bontems, Monier-Dilhan, and Requillart's (1999) theoretical model suggests that some degree of product differentiation (quality difference) is needed for price discrimination; on the other hand, better trade terms can be obtained when product differentiation is low. Retailer considers this tradeoff, and optimal store brand quality is close to that of the national brand but lower. Apelbaum, Gerstner, and Naik (2003) note that increased cooperation between retailers and manufacturers, as well as the introduction of premium store brands, also contribute to this improvement. While most store brand suppliers are smaller regional players (Hoch 1996), nevertheless, more than 50 percent of branded consumer packaged good manufacturers also supply store brands (Quelch and Harding, 1996). Thus, at least there are alternatives for a retailer if a quality store brand is desired. In any case, store brands are generally not innovative but at best me-too-type products.

In terms of perceptions, consumers who rate store brands as equal in quality to national brands increased from 31 percent to 50 percent between 1985 and 1993 (cf. Abe, 1995). A recent study commissioned by the Private Label Manufacturers Association found that 51 percent of consumers preferred the store brand over the national brand in twelve product categories (*Washington Post*,

2005). The study involved blind taste tests and was conducted in ten major U.S. cities. Although objective and perceived quality may be improving, there is evidence that the two may differ. Richardson, Dick, and Jain (1994) examined the effects of extrinsic cues, such as packaging and price, on the evaluation of store brands. They found that store brands were perceived as tasting better when packaged and presented as national brands. Likewise, national brands were rated lower when they were presented as store brands. Their analysis suggests that extrinsic cues play a larger role than objective quality or actual ingredients in the evaluations of store brands.

Apelbaum, Gerstner, and Naik (2003) compiled the quality evaluations of expert judges for seventy-eight product categories from issues of *Consumer Reports*, 1990–1997.[3] They find that the average quality of store brands exceeds the average of national brands in twenty-two out of seventy-eight categories. Even in this case, national brands are sold at a 29 percent price premium compared to the store brands. In the remaining fifty-six categories, however, this premium increases to 50 percent. This finding cannot be explained simply by arguing that the quality evaluations of consumers may be lower than those of experts. Sethuraman and Cole (1999) found that even though (some) consumers considered store brand and national brand quality to be equivalent, they were not willing to pay the same amount for them. One possibility is that consumers may consider the premium fair because national brands have advertising expenses. Alternatively, advertising creates image and familiarity, thereby enhancing utility and positive attitudes (Soberman and Parker, 2004). Further research may illuminate this issue.

The quality of store brands is strongly related to the positioning decision. Theoretical analysis of Tyagi and Raju (1998) indicates that a national brand entrant prefers a more differentiated market (less substitution), whereas a store brand prefers the opposite. They also note that when there are two incumbent national brands, the store brand position will be at some point on the line joining the national brands on the perceptual space.

Sayman, Hoch, and Raju (2002) consider asymmetric national brands and show that under a general set of conditions store brand should be positioned close to the stronger national brand in the category. This strategy involves stealing sales and obtaining better terms from the target. Observational data (regarding packaging, shelf placement, etc.) from two supermarkets indicate that store brands in fact tend to target the strong brand when they follow a targeting strategy. Scanner data from nineteen products suggest that the store brand is able to compete more intensely with the stronger national brand when the quality of the store brand is higher. This finding holds for lower-quality store brands as well, if absolute cross-price effect is used as the measure. Although explicit targeting by store brands has limited effects on perceptions of overall product similarity (their third study), lower prices coupled with higher quality store brands may modify buyer behavior. Using the same scanner data, Sayman and Raju (2004a) find that store brand penetration in other categories reduces the share of leading national brand in the focal category.

Scott Morton and Zettelmeyer (2004) also consider the positioning aspect, arguing that the store brand is valuable because the retailer controls its positioning. In their model, when a store brand is introduced, it will replace the weaker national brand and will target the leading national brand. This is because a close substitute store brand would strengthen the negotiation power of the retailer. They collected data from two supermarkets regarding the imitation strategies of store brands; store brand targets the leading brand in the category 15 percent to 65 percent of the time when placement, size, shape, color, lettering, and the like are considered. Their analysis of IRI scanner data from eighty-two categories suggests that retailers are likely to introduce store brands in categories where the leading national brand was previously stronger.

Others argue that targeting the strong national brand may not always be optimal. Du, Lee, and Staelin (2003) assume a market with two national brands located at the ideal points of two

segments. Depending on the horizontal differentiation (taste) between the national brands and the vertical differentiation (quality) among all brands, including the store brand, it is not always optimal for the store brand to target the strong national brand. Alternatively, the store brand may be positioned close to the midpoint between the national brands, or may target the weaker brand. In fact, the four positioning schemes that they identify correspond to four category management practices. A second paper by Choi and Coughlan (2006) finds that when only horizontal differentiation is considered, the store brand should be positioned away from the national brand (or two undifferentiated national brands).

From a strategic perspective, a store brand that targets the leading national brand may not add to retailer differentiation; or it may be missing an unserved segment. Steiner (2004) notes an anecdote about a drugstore chain that changed the imitation store brand bottle and label so that margins could be increased. Such changes may be triggered by the targeted national brands. Sainsbury agreed to change the packaging and labeling of its Classic Cola after an angry response from Coca-Cola in 1994 (Burt and Davis, 1999). National brands argue that such targeting practices confuse consumers and may lead to incorrect purchases.

Balabanis and Craven (1997) administered a questionnaire to fifty shoppers after their shopping to examine whether "lookalikes" are correctly purchased—lookalike is a term used in the British media to refer to store brands that resemble leading national brands. Although shoppers were less confident that they bought the intended brand in some impulse-item categories, no incidents of incorrectly buying a lookalike instead of a national brand were identified (upon inspection of the shopping bags). Another study by the British Consumer Association (cf. Balabanis and Craven, 1997) reports that 3 percent of the consumers actually bought lookalikes mistakenly. So, it seems that consumers are in general not confused by lookalikes. However, it is still possible that buyers may believe or infer (incorrectly or not) that lookalikes are similar to the target national brands in terms of quality. In other words, incorrect choices may be limited, but incorrect inferences may be taking place (Loken, Ross, and Hinkle, 1986). This issue should be considered by both the national brand managers and marketing researchers.

The competitive effects or positioning of store brands can also be inferred from changes in prices and shares over time. Hoch, Montgomery, and Park (2003) analyzed data from 225 categories and found that smaller brands lost a greater share than expected (proportional draw). In their theoretical model, the store brand is assumed to target the leading brand, and its share grows over time. It is possible that the store brand is similar to the leader but it attracts the buyers of smaller brands with its lower price. Or it is possible that shelf space limitations and assortment reductions work against these smaller brands. Pauwels and Srinivasan (2004) found that store brand entry hurt the second-tier national brands the most—through lower revenues and higher price sensitivity. In fact, premium brands benefit from store brands (note that premium brands are not necessarily leaders).

Sudhir and Meza (2004) provide evidence that the retailer disfavors the targeted brand (the leader) by increasing its retail price and margin whereas margins from nontargeted brands are reduced. This approach maintains a price gap between the store brand and its target brand. Their data involve six subcategories of RTE cereal where the store brand targets the leading brand in each case. Disfavoring of the targeted leading brand is observed only in attractive categories—large volume categories and those presenting an opportunity to steal share (from a strong leading brand).

Another issue associated with positioning is that some retailers may follow a two-tier store brand strategy (Steiner, 2004). For example, Wal-Mart sells two kinds of apple juice, low price Great Value and premium Sam's American Choice (Berlinski, 1997). Nevertheless, some retailers may introduce multiple store brands that target different national brands—possibly for better trade terms from both brands. Examining this issue both theoretically and empirically, Sayman and Raju

(2004b) provide evidence that it is more common to observe two store brands, rather than one, in categories where the top two national brands are similar in strength.

5. What Are the Drivers of Store Brand Success?

Although the correct metric for performance is profit, empirical studies typically use store brand share as a proxy for success. We group the variety of factors driving the store brand performance as follows:

A. Product category variables, including marketing variables
B. Retailer variables, including industry and demographic variables.[4]

A. Product Category Variables

Store brand share shows a great deal of variation across categories, with 80 percent of all store brand sales being generated from 20 percent of product categories with a store brand (cf. Basuroy et al., 2004). For example, in 1991 store brand share of category sales in milk was 64 percent, whereas it was 8 percent for coffee—according to IRI data cited in *Brandweek* (1992). Dhar and Hoch (1997) found that the largest variation of store brand shares was across categories rather than across markets or retailers. Several empirical and theoretical studies examined the contribution of supply- and demand-related factors to this variation. In a cross-categorical study, Hoch and Banerji (1993) examined data from 185 product categories, and found that 6 variables explained 70 percent of the variation in shares. More specifically, store brands perform better in high-volume and high-margin categories. They also do better against fewer national brands that do not advertise heavily. High product quality and low variation in quality help store brands to gain market share. They also note that higher quality is more important for store brands than lower price.

Raju, Sethuraman, and Dhar's (1995a) analysis suggests that the introduction of a store brand is more likely to increase the retailer's profits in categories where the cross-price elasticities between the national brands are lower but cross-price elasticities between the store brand and the national brands are higher. The latter basically means that the store brand can attract national brand buyers with a small price difference. When the number of national brands is large, store brand share will be lower but it is more likely to increase retailer profits. They test the model on data from over 400 product categories and find that the data are consistent with the model's predictions.

Ailawadi and Harlam (2004) focus on the retailer's margin from national and store brands; their empirical models consider the category size and market share—which are the other components of profitability. As mentioned above, they report a positive relationship between national brand retail margin and store brand share. They also find that when the overall price elasticity of the product category is high, margins from the store brand are lower. Category advertising decreases retailers' margins from national brands, but contrary to their expectations, it increases store brand margins in one of the two retailers (the effect is not significant in the other retailer). Their explanation is that higher national brand advertising and retail prices may enable the retailer to charge high prices for the store brand as well. Furthermore, they report that retailers' margins are higher in categories where purchases are infrequent.

Empirical analysis conducted by Scott Morton and Zettelmeyer (2004) indicates that store brands are more likely to exist in categories where the leading national brand has a high share (a four-year lagged variable), or the advertising-to-sales ratio is high. Advertising-to-sales ratio is a proxy for the difference between average and marginal costs; the larger this difference, the easier for the store brand to charge a lower price than national brands while still obtaining a high margin.

However, when both the share of the leading national brand and advertising are high, store brand entry is discouraged; this means that the image effects and innovation capability of the national brands are strong. Their analysis also indicates that store brand presence is positively related to category revenues and the number of manufacturers.

Batra and Sinha (2000) focus on risk as perceived by consumers; their mall intercept survey indicates that store brands sell more in categories where making a mistake in brand choice leads to fewer consequences. Lower quality variability across brands contributes to this perception as well. Related to this, when a category has more *search* than *experienc*e characteristics, consumers are more likely to buy store brands.[5] The fact that search characteristics make product comparison easier (through written descriptions) implies that store brands are of comparable quality to national brands. Regarding the perceived risks, Livesey and Lennon (1978) note that English consumers buy national brand tea for their guests but they buy store brand tea for themselves.

Cotterill and Putsis (2000) analyzed data from 143 food categories and found that feature advertising and display promotions were more effective ways of gaining share for the store brand than were price reductions. On the other hand, Hoch, Montgomery, and Park (2003) find that the only effective marketing tool to increase store brand share is promotional display. Putsis and Dhar (2001) find that store brand promotions (particularly nonprice promotions) may expand category expenditures even though the effect on share may be small.

In summary, the literature identifies quite a few category-related factors that affect store brand performance. Low-risk (for consumers) products, higher volume, and higher margin categories with less competition among national brands are favorable for store brands. Offering high quality, but low variation in quality, and successfully competing with national brands also help the store brand. However, the picture is not so clear for some variables because different studies employ share, margin, or existence as performance measures. More national brands in the category may limit store brand share, but store brand may improve the retailer's profit more in such categories. Higher national brand advertising may limit store brand share, but the retailer may charge higher store brand prices or margins in such categories (Kim and Parker, 1999). The availability of more extensive data sets will help to clarify some of these issues. Retailers should keep in mind that category profit is the key, rather than the store brand share. Hoch and Lodish (2006) conducted in-store experiments and found that increasing the store brand price (and keeping national brand prices constant) can increase the retailer's category profits for the analgesics category.

B. Retailer Variables

Retailers can influence the performance of their store brands, and therefore store brand share varies considerably across retailers (Dhar and Hoch, 1997). Furthermore, variables pertaining to the trading area of the retailer, such as demographics and competition, influence the store brand share of the retailer. Hoch and Banerji (1993) argue that store brands are stronger in Europe because retailers devote more resources to them than is the case in the United States. This may be due to the higher concentration of retailers in Europe (Hoch and Banerji, 1993; see Berges-Sennou, Bontems, and Requillart [2004] for country-level data). Hoch (1996) argues that there are fewer manufacturers with smaller economies of scale in European markets, and hence store brands face a smaller degree of competition.

Dhar and Hoch (1997), in the study noted above, examine the factors affecting the variation in store brand penetration across retailers. Elements that are advantageous to store brands include the retailer's commitment to quality, the breadth of store brand offering, the use of own name on the store brand, premium store brand offerings, chain size, everyday low pricing (only in categories with lower-quality store brands), promotional support for the store brand, and category

expertise. Elements that work against the store brand are wider assortments of national brands and the promotion of national brands. They also argue that national brands are threatened most in categories where store brand share has a high variance across retailers. The idea is that low share store brands can emulate the successful ones.

Conclusions and Suggestions for Future Research

As is evident from this review, store brands have generated quite a bit of intellectual curiosity and consequently researchers have studied many aspects of store brands in great detail using a number of different research approaches. As the retail environment in the United States and many other economies continues to change, store brands will remain an important area of investigation.

While a number of important managerial implications can be derived from this body of research, a few words of caution are important. First, a store brand in a particular category of a retailer is a specific case and should be considered as such. Second, store brands are, in general, beneficial to retailers; but, retailers should not push store brands at the expense of national brands. National brands offer comfort and assurance to buyers, and they have a consumer base willing to pay the price premium. National brands are traffic builders and may offer higher dollar margins, not to mention higher turnover. In short, national brands are vital for the retailer. Third, the long-term impact of store brands on national brand manufacturers and consumer welfare may be more elaborate (see Dobson [1998] for a comprehensive discussion of the issue). Despite the growth of store brands in recent decades, manufacturer profitability has not worsened (Ailawadi, 2001). Steiner (2004) argues that consumers are best served in a market where leading national brands are effectively challenged by store brands and prices are under control. However, national brands should be able to retain scale economies and innovation for long-term welfare.

Section 1 reviews research on the benefits of store brands to retailers. Future research may try to disentangle and quantify the benefits that retailers obtain from store brands. Similarly, theoretical models may examine the conditions under which these benefits apply.

The research reviewed in section 2 provides a fairly in-depth look into who buys store brands and how much these buyers matter to the retailer. Further research that combines purchase data from multiple retailers with demographic and, more important, psychographic data can further strengthen our knowledge of store brand buyers. An interesting approach by Erdem, Zhao, and Valenzuela (2004) analyzes scanner data from three countries and three products. They find that consumer uncertainty about quality, learning via quality consistency, risk aversion, and price sensitivity contribute to store brand success.

The research reviewed in section 3 by and large demonstrates that store brands do not have as much market power as national brands do. Furthermore, national brands do not necessarily decrease wholesale prices to fight against the store brand. The effect on the retail prices of the national brands is even more divergent; retail prices may very well increase as store brands gain share. Further research on price changes, preferably using larger data sets, would be useful. In particular, there is a need to understand when wholesale prices, retail prices, and margins increase or decrease. Some category or retailer factors may moderate price increases. For instance, there is evidence that retail concentration increases both national and store brand prices (Cotterill and Putsis, 2000) but narrows the price differential (Cotterill, Putsis, and Dhar, 2000). Concentration in the category, on the other hand, enlarges the price differential (Connor and Peterson, 1992; Cotterill, Putsis, and Dhar, 2000).

The studies reviewed in section 4 provide insight into and evidence on the positioning of store brands. More evidence regarding the effects on share, price, and profit of different national brands may be helpful. In addition, we see different ways of classifying national brands (leading brand

implies a stronger share whereas premium brand implies a higher price) in the literature. We also need to understand the mechanisms under the observed results. For instance, is it possible that a store brand successfully targets the leader, and cross-price (promotional) effects between these are substantial, but it still hurts the weaker brand?

The studies discussed in section 5, in conjunction with those in section 2, provide us with a good understanding of category-, retailer-, and consumer-related factors as they affect store brand success. A key research direction could be to utilize and compare multiple measures of performance, for example, share and profit. This obviously depends on data availability. For instance, the number of national brands in a category may have different implications for store brand introduction, share, profit from the store brand, and total category profits.

In addition to these, we believe there are a number of other issues listed below that deserve more attention, and we hope researchers interested in store brands will consider these as they plan their research agendas.

- 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. For instance, in Lal (1990) and Rao (1991) the national brand(s) is promoted to hinder store brand from attracting consumers. More recently, Karray and Zaccour (2004) examined cooperative advertising by national brands as a strategy against store brands. In a paper with broader focus, Mills (1999) examines the mechanisms of some manufacturer strategies against store brands. Increasing the quality gap and nonlinear pricing seem to be more promising against the store brand program. Furthermore, he finds that coupons targeting store brand buyers are better than randomly distributed coupons. In a survey of national brand managers in the Netherlands, Verhoef, Nijssen, and Sloot (2002) find that price reductions and flanker products are not commonly used against store brands and that focusing on technology and brand strength seem to be effective.
- On a related issue, national brand manufacturers' decision to supply store brands and the retailer's vendor choice have been discussed in the literature (Baltas, 1999; Berges-Sennou, Bontems, and Requillart, 2004; Glémet and Mira, 1993a, 1993b), but empirical and theoretical research is limited. Recent theoretical work by Kumar, Radhakrishnan, and Rao (2005) examines the retailer's choice between the national brand manufacturer and an independent supplier as the store brand vendor. Wu and Wang (2005) offer a rationale for supplying store brands: In their model, a store brand provided by one national brand manufacturer mitigates the promotion of competition between two manufacturers.
- Researchers have by and large focused on me-too-type store brands. Future research may consider premium store brand products as well.
- Prior research has devoted little attention to certain promotions as they apply to store brands, such as sampling of store brand products and bundling with other store brands or with national brands (presumably in other categories). For instance, Sprott and Shimp (2004) suggest that in-store sampling may reduce consumers' reliance on extrinsic cues in the evaluations of high quality, and thus enhances perceived quality.
- A related issue is that some retailers use multiple lines of store brands. For example, Kroger has Private Selection and Kroger brands with different image and selling propositions. Future research can examine the retailer's image as it relates to using its name for different store brand lines.
- Another avenue for research may be the issue of multiple brand names for different groups of related products, for example, different brands for cleaning products versus personal hygiene products. Although at the beginning of the chapter we mentioned the benefits of umbrella

branding, using the same brand may not always lead to desirable associations in consumers' minds. Alternatively, store brand associations may be at a more abstract level (Aaker and Keller, 1990; Sayman and Raju, 2004a), and umbrella branding may prove to be useful. A key question for the retailer (obviously for manufacturers with different lines as well) is how to group products for multibrand purposes. Future research may also investigate whether there are diminishing returns on store brand extensions, or address credibility issues in consumers' eyes, the effect of pace of introductions, and so forth.

Notes

1. See the PLMA International website: www.plmainternational.com/plt/pltEn.html.
2. In their numerical analysis, they vary the base-level demand for the store brand to imitate different categories.
3. They used a ruler to measure the length of the bar charts representing quality.
4. For an alternative classification, see, for instance, Hoch and Banerji (1993), who examine the consumer, retailer, and manufacturer factors affecting the store brand share.
5. Search attributes are those that can be evaluated before consumption, for instance, the calorie content of juice. An example of an experience attribute is its taste. See Nelson (1974) for a detailed discussion.

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Chapter 6

LANGUAGE, THOUGHT, AND CONSUMER RESEARCH

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Abstract

Language is universally acknowledged as the currency of communication through which ideas and information are transmitted interpersonally. This chapter delves into an intrapersonal aspect of language, namely, whether the structure of a language, per se, influences the thoughts of those who speak it. The chapter summarizes voluminous and disparate empirical research conducted over the past half century on the effects of language structure on a variety of mental activities. Support is found for the weak form of the linguistic relativity hypothesis, the notion that the structure of a language does indeed influence (but not determine) cognition. Several substantive and methodological implications of the linguistic relativity hypothesis are discussed in the context of consumer research.

Most of what is thought to be known about human behavior in general and consumer behavior in particular is based on research conducted in a relatively limited variety of study settings. For example, the bulk of consumer behavior research to date has been conducted in a developed economy (the United States), within a Western culture, using samples of college students. Consequently, there have been numerous exhortations to examine the external validity and generalizability of this research by employing different and multiple countries, different and multiple cultures, and different and multiple populations (e.g., McCort and Malhotra, 1993).

Interestingly enough, however, with the exception of a handful of consumer behavior scholars, including David Luna, Laura Perrachio, Bernd Schmitt, and Nader Tavassoli, language seems to have been overlooked by researchers as a factor influencing the external validity and generalizability of consumer research findings. For example, despite the presence of Tavassoli as a coauthor, Fitzsimons and colleagues (2002) completely ignored the effect of language in their review of unconscious influences on choice behavior. At the same time, research by anthropologists, cognitive scientists, linguists, and psychologists suggests that language per se may influence mental processes or even behavior in certain instances. In brief, language appears to be treated by consumer behavior researchers as a technical consideration, one that can be dealt with through appropriate translations, back-translations, and statistical tests of equivalence and invariance (e.g., Craig and Douglas, 2000; Heine et al., 2002; Mullen, 1995; Steenkamp and Baumgartner, 1998; Wong, Rindfleisch, and Burroughs, 2003).

This treatment of language reflects a dominant paradigm in consumer research, that of the search for universals. Consumer-oriented research is essentially focused on understanding and modeling fundamental and widespread phenomena such as attitudes, affect, information search and processing, consideration and choice processes, reactions to advertising and branding, and so

forth. These phenomena are believed to be shared by all humans. Even in cross-cultural research on consumer behavior where diversity prevails, "the most common objective appears to be generalization" (Maheswaran and Shavitt, 2000, p. 63).

All theoretical frameworks and conceptual models are developed and tested in a cultural and linguistic context (most commonly English). Consequently, if a study is conducted in only one language, its possible effect on study results is ignored. If generality is sought and a study replicated or adapted in another context and language or conducted in different languages, then language is typically viewed as a variation across populations, a variation that has to be dealt with to ensure comparability of results. Again, language is not considered as a variable able to explain differences obtained between or among groups of study participants. On the contrary, researchers tend to believe that possible differences in results due to the various languages used in a study need to be eliminated through proper procedures, such as controlling for conceptual equivalence and metric equivalence. Therefore, the tradition in cross-cultural studies is to ensure comparability of results through elimination of possible linguistic variations.

Many marketing scholars (e.g., Bolton, 2003; Steenkamp, 2005; Winer, 1998) have called for more internationally based research. Virtually all of these scholars stress the need to think beyond U.S. consumers, models, and data. They have argued that by taking cultural differences into account (e.g., differences in values, norms, and beliefs), enriched models and a deeper understanding of the influence or moderating effect of culture on psychological constructs and behavior will ensue.

Differences observed across countries or nationalities are usually attributed to culture because countries and nationalities are considered to be proxies for culture. Even if data are collected in different languages in a single country (e.g., English and French in Canada, as in Laroche et al., 2005), differences observed in relationships among constructs are typically linked to cultural orientations. However, it could (perhaps should) be argued that at least some of the differences observed between groups speaking different languages might be due to the very use of these languages, not that the groups differ culturally.

From time to time, cross-cultural researchers have recommended the use of bicultural study participants, recognizing that individuals may experience and live in different cultures (Hong et al., 2000). For example, Chen, Ng, and Rao (2005) studied a population of Singaporean students who had their own native culture (Chinese, Malay, or Indian) but were also fully exposed to Western influences and culture. The surprising aspect of their study is that it was conducted only in English, even though a culture variable was manipulated through visual priming and exposure to cultural icons. Of course, the use of a unique language simplifies all procedures linked to achieving linguistic equivalences, but it also implies that the language employed is consistent with both cultural settings and that it has no effect on the research results. What if study participants had been exposed to messages and questioned in Chinese Mandarin, Malay, or Tamil instead of English (for the native culture condition)? Could language, either independently of, or in conjunction with, cultural priming influence the results of a study?

What if the language that a person speaks, in and of itself, influences the attitudes, information processing, cognitions, perceptions, and so forth of that person? More specifically, if language affects psychological and behavioral characteristics, many consumer research findings may be at least partially a function of the language spoken by study participants, apart from the phenomena being investigated. If so, it is unfortunate that language seldom appears to merit consideration as an explanatory, mediator, or even moderator variable when assessing external validity or attempting to generalize consumer behavior research findings.

Consider the language-cognition framework espoused by Lucy (1996). According to Lucy, the relationship between language and cognition has been investigated at three levels of analysis. The first

level is concerned with the extent to which the "native language" (i.e., the "natural" or "first" language) shared by a community and used as a communication device affects cognitions. Research at this level has contrasted cognitions of people possessing a native language with those not possessing a native language (such as deaf children not yet exposed to a conventional language model or other species lacking an elaborate language). This level of analysis explores the *enabling function* of language. The second level of analysis is concerned with the effects of language on cognitions that derive from speaking one particular native language (e.g., English) rather than another (e.g., Korean), primarily due to differing grammatical structures and vocabularies. Research at this level focuses on the *shaping function* of language and is generally associated with the term "linguistic relativity" (Whorf, 1956). The third level of analysis explores the effects, within a given native language, of using that language in a precise way. Research at this level of analysis examines the *facilitating function* of language.

Purpose

The purpose of this chapter is to present a review of research on the potential influences of language on a variety of psychological constructs generally, and on cognition specifically, and argue for explicitly incorporating language as a variable in theories and empirical studies of consumer behavior and marketing research. As such, the chapter addresses what is commonly termed the "linguistic relativity hypothesis" and the shaping function of language. (The other two functions of language, enabling and facilitating, will be left for the future.) However, before discussing the linguistic relativity hypothesis and its implications, a brief orienting discussion of language is presented as an expository foundation for the remainder of the chapter. This discussion is followed by an overview of the linguistic relativity hypothesis, which in turn is followed by an overview of research that has investigated selected aspects of the hypothesis in a variety of domains under numerous conditions. The chapter concludes with several implications for consumer research and marketing research.

Language and Meaning

Globally, there are more than 6,900 different languages presently spoken, with 347 of them spoken by at least one million people (*World Almanac*, 2005). From a lay perspective, language consists of words and methods for combining them to express thought (*Oxford English Dictionary*, 1989). Technically, language consists of "a set of linguistic features (syntactic, semantic, and phonetic) that allow mutually intelligible communication within a group of speakers" (Warren-Leubecker and Bohannon, 1989, p. 330). From an abstract perspective, language consists of signs that form a system in which differences between "signifiers" or words correspond to differences between "signifieds" or concepts (de Saussure, 1916; Hayakawa and Hayakawa, 1990). As such, there are two basic levels of representation in language, a lexical level that consists of words and sentences, and a conceptual level that consists of the meanings associated with words and sentences. At the conceptual level, concepts are primarily defined in terms of their differences from other concepts. The French word "bleu" designates a particular concept only by virtue of the existence of other words such as "vert" and "violet" (Caron, 1989).

Words and Concepts

The meaning of a word can be theoretically viewed as a set of features that distinguishes it from the meanings of other words (Smith, Shoben, and Rips, 1974). This so-called componential theory of meaning (Katz and Fodor, 1963) permits the meaning of all words to be expressed in terms of a finite number of elementary semantic features; it has been supported by a number of studies (e.g.,

E. Clark, 1973; H. Clark, 1974), particularly those examining the manner in which children acquire the meaning of words. A child's vocabulary can be seen to evolve as more semantic features are associated with a word. For example, a very young child might associate the word "dog" with all medium-size animals with four legs. Additional semantic features would then be added and associated with the word (for example, "barking" or "friendly") as the child ages, rendering the distinction between "cat" and "dog" possible.

This view of the relationship between words and meaning is sometimes seen as implying that the meaning of a word is an invariant mental concept (Caron, 1989). Even if this were true, though, it does not preclude the possibility that the meaning associated with a word could vary according to language. Each language may have specific (and different) semantic features associated with a word referring to the same concept, raising the issue of whether the meaning of a word in one language possesses a translation equivalent in a second language. This issue has been explored in studies using bilingual individuals.

Extensive research has been conducted with bilinguals in attempts to understand how their languages are stored in memory and what kinds of links exist between the two languages (e.g., Chen and Leung, 1989; Dufour and Kroll, 1995; Kroll and deGroot, 1997; Kroll and Stewart, 1994; Potter et al., 1984; Thorn and Gathercole, 1999). This research permits an assessment of whether different languages access a common conceptual system or different conceptual systems (see Francis [1999] for a review). If a common conceptual system exists, there is a high probability that translation-equivalent words access a common underlying meaning. If different conceptual systems exist, translation-equivalent words possess different conceptual meanings.

Without belaboring the research findings, there appear to be direct links between the two languages of a bilingual individual at the lexical level that allow the direct connection of translation-equivalent words such as "door" (English) and "porte" (French). However, one question explored in this chapter is whether the concepts that are accessed in two languages are equivalent, given the existence of translation-equivalent words. Dufour and Kroll (1995) hypothesized that the number of conceptual features or nodes is differentially activated for a bilingual's two languages. They believed that a fluent bilingual conceptually accesses a large number of nodes shared by the two languages, although there may be some nodes that are only accessed through the native or first language. If this is the case for perfectly fluent bilinguals, it suggests that the meaning associated with translation-equivalent words may not in fact be strictly equivalent, thus revealing an effect of language on cognitions.

DeGroot (1992a,1992b) proposed a model consistent with the componential theory of meaning that represents how words in different languages are associated with concepts. In the model, words in a language activate a series of conceptual features (nodes), and it is the series of features activated that provides meaning for the words. Accordingly, translation-equivalent words may not necessarily activate the same nodes in different languages and therefore might generate different meanings. In particular, it appears that concrete words in different languages share more common conceptual features than do abstract words. This is due to the fact that concrete words generate more conceptual features than do abstract words, leading to a greater likelihood of overlapping concepts. Also, concrete words have more opportunities than do abstract words to share key features that correspond to the function and appearance of the related concepts.

Contextual Cues

Research has also focused on the role of context in accessing the meaning of a word. The simple example of polysemy (as for the word "study," which might refer to a reading room or to an in-

stance of research) shows that it is the word's context (i.e., the other words in the sentence, other sentences, or even vocalizations) that provides access to meaning. In particular, Katz and Fodor (1963) argued that the context of a word allows inappropriate meanings to be eliminated, whereas Johnson-Laird (1983) demonstrated that the interpretation of a word depends on the situation. For example, the sentence "I saw the Azores flying the Atlantic" is apparently ambiguous but will be interpreted in only one way (the Azores is a fixed object and cannot therefore be the subject of the Atlantic). If, however, the sentence appeared in a story about the explosion of the earth, it could have a different meaning. Further, a word is linked not only to a concept but also to other associations relating to the concept. The word "dog" might evoke associations such as love, fun, run, childhood, or danger that go beyond the physical characteristics of the animal because of personally held schemata. This implies that in addition to evoking concepts, a word might also evoke representations, emotions, and attitudes at an individual level, a group level, or both an individual and a group level.

The specific or particular language in which a word is uttered or written might be deemed to be a contextual cue that, beyond the basic conceptual features associated with the word, might convey other associated, language-specific, conceptual features. Even for concrete words, contextual elements, such as differences in cultural imagery across languages, may lead only to partially shared meanings. As an illustration, Paivio (1986) suggested that the word "pain" in French and its translation-equivalent "bread" in English evoke images of different kinds of breads and related attitudes and behaviors. Francis (1999) noted that in English, "butter" is strongly associated with "bread," whereas "mantequilla" is not strongly associated with "pan" in Spanish.

Although the linguistic effects discussed in this section reside at the lexical level rather than at the grammatical or structural level, in and of themselves they argue for an effect of language on various psychological constructs inasmuch as different meanings can be associated with seemingly translation-equivalent words. As far as cross-cultural studies using different languages are concerned, even if translation-equivalent words are used, it is important to verify that the shared meanings of the words are not only the basic core concepts associated with the words (which is obvious), but also that the related concepts, attached emotions, or implied attitudes are equivalent. This latter notion segues into the effect of language structure on thought, especially as embodied in the linguistic relativity hypothesis.

Language Contrasts

Languages such as English, French, Chinese, or Baoulé require the same basic capacities to be learned and spoken. However, languages differ a great deal. Some differences that might affect psychological characteristics such as perceptual processing, information encoding and retrieval, memory, and cognition, among others, are briefly reviewed here to facilitate later discussion. (See Bates, Devescovi, and Wulfeck [2001] for a complete discussion of cross-language contrasts and their implications.)

Languages differ qualitatively due to the presence or absence of specific linguistic features. For instance, whereas Chinese has lexical tone and Russian has nominal case markers, English has neither. Languages also differ quantitatively because certain language structures (e.g., lexical, phonological, grammatical) are commonly used in some languages but not in others. Passives are rare in English and French but common in Sesotho or German; relative clause constructions are common in Italian.

Languages also vary in reliability or cue validity, which is the quantity or value of information delivered by a given linguistic form in a specific language. For example, word order, such as noun-

verb-noun, is a very reliable cue for inferring meaning in English but a poor one in many other languages, including Italian, German, and Turkish. Consider asking listeners "who did it?" or "who is the subject?" in sentences such as "The rock is kissing the cow" or "The cows is chasing the horse" (MacWhinney and Bates, 1989). English listeners choose the first nouns in both instances, even though the sentences make little sense (rocks do not kiss and cows is a plural noun, whereas the associated verb "is" is singular) because they follow the very strong noun-verb-noun order of their language. Speakers of many other languages choose the cow (because animacy is superior to word order) or the horse (because noun-verb agreement defeats word order). The fact that noun-verb agreement is a powerful cue in languages such as Italian but not in English is probably linked to verb marking (Italian verbs can take up to forty-seven different forms as compared with only five in English). In Chinese, there are no plural inflections of nouns or tense inflections of verbs, and word order is flexible. Because of the resulting lack of cue validity, Chinese speakers need to use different sources of information when processing sentences, such as prosody, semantics, and contextual cues.

The structural construction of a language determines whether it is a low-context language or a high-context language (see Hall, 1976) and consequently implies a form of information processing (reliance on words rather than context). Kashima and Kashima (1998) have argued that in Western languages such as English or German, a grammatically acceptable sentence needs to include relevant pronouns. This implies the construction of explicit sentences, leaving little room for interpretation coming from the total context of a communication. In more interdependent cultures, such as Japanese, Chinese, Korean, or Spanish cultures, the use of pronouns is often optional and contextual communication cues are important for understanding the meaning of a word. Thus, languages such as Japanese or Spanish are structurally high-context ones, which implies reliance on contextual cues to interpret words.

Languages differ in the use of phonetics and phonetic contrasts. Some sounds, such as "on" (as in the French word "balcon") and "an" (as in the French word "grand"), which are common in French, do not exist at all or do not exist jointly in many languages (e.g., English, Arab, Croat, German). The German language offers a "ch" sound (as in "ich"), which is quite unique. People who do not speak German do not distinguish between the German soft "ch" and the French "ch" (as in "chemise" in French or "shallow" in English). Tunisians will often substitute the "an" sound for the original "on" sound when speaking French, and Croats do not differentiate the "on" and "an" sounds because neither exists in their language. In general, phonetic contrasts that are not used appear to be suppressed in early life. The effect of first language phonetics probably explains difficulties encountered when attempting to speak a second language without an accent.

Moreover, languages differ a great deal in the way they break concepts down into semantic categories. These differences may well shape thoughts and affect cognition. Examples drawn from three domains well developed in the literature, the number-marking system (Gentner and Boroditsky, 2001; Lucy, 1992b), spatial frames of reference (Brown, 2001; Levinson 1996a, 1996b, 2003), and spatial semantic organization (Bowerman, 1996; Bowerman and Choi, 2001) are used to illustrate the shaping function of language.

First, languages differ in the way they individualize objects and in the way they signal plurals for nouns. In English or French, humans, animals, and objects are considered to be discrete entities and plural is obligatory (one person-two persons, one dog-two dogs, one table-two tables). Also, English or French numerals modify the nouns that are pluralized (generally with an "s" ending but sometimes with a modification of the noun as "mouse-to-mice" in English or "cheval-to-chevaux" [horse] in French). Neither language, however, individualizes or marks plural for substances such as flour, salt, or gasoline. In this case, individualization and pluralization are marked through a classifier

construction such as "one/two cups of tea" or "one/two lumps of sugar." In other languages, such as Chinese, Japanese, Thai, or Yucatec Maya, there is a lack of syntactic count/mass distinction, and all inanimate objects are treated like mass nouns, which therefore have no plural marking. (This is also the case for animals in Japanese.) This could affect the way in which objects/animals/persons are classified. In these languages, numeral classifiers, which often provide information about the shape or material properties associated with a noun, need to be used to define, count, and pluralize nouns. The absence of or need for numeral classifiers may draw attention to different properties, such as shape if the object is individualized, as in "a chair," whatever its composition might be, or substance if the numeral classifier is obligatory and designates material composition, as in, say, a "hard-metallic thing chair" (where "hard-metallic thing" is the obligatory classifier).

Second, spatial conception as expressed by languages is one domain in which few differences might intuitively be expected across languages. People using any language locate things, locate themselves, go from one point to another, and answer "Where" questions. Western tradition assumes that languages simply translate an egocentric space concept that places the body at the center and locates objects relative to that locus. However, Levinson and his research group at the Max Planck Institute for Psycholinguistics (e.g., Levinson 1996a, 1996b, 1997, 2003) have documented that spatial descriptions vary a great deal. The seemingly universal and obvious concepts of "left" and "right" are simply missing in many languages. After studying the different grammars or lexicons and the way languages specify the location of an object, Levinson (2003) identified three basic frames of reference that he termed intrinsic, relative, and absolute. Using the intrinsic frame of reference, the location of a search object is designated relative to a pivotal object as in "the ball is in front of the chair." Using the relative frame of reference, a person will indicate the place of the search object relative to his or her position as in "the ball is to the right of the chair." Using the absolute frame of reference, fixed locations (celestial or landscape regularities) are used such as in "the ball is north of the chair." Even if these three frames of reference are familiar to an English (or French or German) speaker, (1) not all languages use all three of them, (2) languages further vary in the way they use a frame of reference (e.g., the concept of front varies), and (3) some familiar frames cannot be used in certain situations. An English speaker will not say "the ball is north of the chair" for the simple reason that the speaker will generally not know what direction is north. Speakers employing languages that frequently use the absolute frame of reference need to know cardinal locations at all times and places.

Third, spatial semantic organization may also be intuitively thought to be similar across languages because the meaning of spatial morphemes should be derived from biological or physical constraints such as gravity or the front-back asymmetry of bodies (H. Clark, 1973; Slobin, 1973). However, research has shown that considerable cross-linguistic differences exist in spatial semantic structuring (Bowerman, 1996; Bowerman and Choi, 2001; Brown, 1994, 2001; Choi and Bowerman, 1991; Talmy, 1983). These differences are illustrated through the conceptualization of static spatial relationships and the use of words of support and containment such as the (English) words "in" and "on" or their equivalents. English makes a distinction between contact (a book *on* the table, a leaf *on* the twig, a sock *on* a foot) and containment (a ball *in* the bag, a coin *in* the pocket). Berber and Finnish also use two morphemes but categorize "in" and "on" differently from English. French also uses "on" ("sur") and "in" ("dans"), but would indicate "un tableau *au* mur" rather than "a painting *on* the wall" (literally "un tableau *sur* le mur") because the contact between the wall and the painting does not result from gravity. What is considered "support" or "containment," and what other properties in relationships among objects will be considered (such as firm or loose containment, which needs to be specified in Korean) varies among languages. All of these differences in language structure affect the creation of cognitive categories.

This section briefly illustrated how languages differ on a variety of dimensions such as their structural construction, their phonetic contrasts, and the semantic categories they imply. The implications of these differences for human behavior in general and consumer behavior in particular are addressed in the following sections of the chapter.

The Linguistic Relativity Hypothesis

The influence of language on cognition has been long argued by philosophers such as Locke, Condillac (Adler, 1952, chap. 45), Wittgenstein (Van der Merwe and Voestermans, 1995), and von Humboldt ([1836] 1988), as well as anthropological linguists such as Boas (1916). However, the most controversial view of the influence of language on cognition is the "linguistic relativity principle," often referred to as the Sapir-Whorf hypothesis or the linguistic relativity hypothesis (e.g., Sapir, 1949; Whorf, 1956). This hypothesis states that the language one uses significantly influences cognitions, conceptualizations, and perceptions. Sapir (1949) and Whorf (1956) recognized that every language has some sort of formal internal organization and grammatical structure that allow classification and categorization of elements and experiences. Sapir argued that while thought might exist independently of language, it is only through language and language categories imposed on an individual that he or she is capable of conceptualizing phenomena. Therefore, language and its grammatical structure guide and shape an individual's representation and conceptualization of the world (i.e., "Weltanschauung," worldview, or picture of the universe). In brief, according to the linguistic relativity hypothesis, language influences the understanding of reality and human behavior.

Sapir (1961, p. 69) specifically observed that

> Human beings do not live in the objective world alone, nor in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the "real world" is to a large extent unconsciously built up on the language habits of the group. No two languages are ever sufficiently similar to be considered as representing the same reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached. . . . We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation.

Whorf, who was a student of Sapir, expanded on Sapir's ideas by investigating how languages classify experiences. He noted that language classifications (grammatical categories such as plurality, gender, nouns and verbs, tenses, expressions of time, space and matter, concreteness and abstractness, animate and inanimate) differ across languages and speculated that these differences are systematically organized such that they provide underlying schemata for conceptualizing and thinking about phenomena. Moreover, these schemata are unconscious and seem natural to everyone employing the language (so as to reflect *the* state of nature).

In particular, Whorf (1956) observed that

> We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every

> observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, BUT ITS TERMS ARE ABSOLUTELY OBLIGATORY [capitalization in original]; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees [pp. 213–214]. . . . These automatic, involuntary patterns of language are not the same for all men but are specific for each language and constitute the formalized side of the language, or its "grammar"—a term that includes much more than grammar we learned in the textbooks of our school days. From this fact proceeds what I have called "the linguistic relativity hypothesis," which means, in informal terms, that users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world. (p. 221)

Whorf particularly emphasized the influence of linguistic structure on concepts rather than on merely perceptions. He posed the rhetorical question (Whorf, 1956, p. 138), "Are our own concepts of 'time,' 'space,' and 'matter' given in substantially the same form by experience to all men, or are they in part conditioned by the structure of particular languages?" Whorf compared English and Hopi grammatical structures and showed that, among other things, the two languages treat the phenomenon of duration in different ways. The fact that time is "objectified" in English (counted as quantities) favors historicity, interest in the past, interest in exact sequences, dating, and the keeping of records, whereas the Hopi view of time does not. Whorf also argued that the entire grammatical structure of a language (rather than simply words or the presence or absence of words that might be caused by a state of nature) affects thought.

The linguistic relativity hypothesis, although easily understandable and illustrated by a variety of examples drawn from different languages, is often expressed in general and imprecise (or metaphorical) terms. Brown (1976, p. 128) argued that Whorf appeared to put forward two basic hypotheses:

- "The structure of anyone's native language strongly influences or fully determines the worldview he will acquire as he learns the language."
- "Structural differences between language systems will, in general, be paralleled by nonlinguistic cognitive differences, of an unspecified sort, in the native speakers of the two languages."

The first apparent hypothesis is stated in very strong terms ("fully determines") and is generally considered to be the *strong version* of the linguistic relativity hypothesis. This position is hardly tenable and is in fact an exaggeration of Whorf's views. It is generally undisputed that some thoughts are independent of language and that infants (before the acquisition of language) have some thoughts and memories (cf. Piaget, 1937; Rosch and Mervis, 1977). Keller and Keller (1998) argued that mental activity occurs in diverse modes and that ideas can be constructed and modified through distinct information processing systems operating independently. For example, visual imagery and sensorimotor representations exist prior to linguistic representation in evolutionary terms, and there is no reason to assume that these modes of information processing change with the emergence of language.

The second apparent hypothesis ("structural differences between language systems will, in general, be paralleled by nonlinguistic cognitive differences") is termed the *weak version* of the linguistic relativity hypothesis. Following Hunt and Agnoli (1991, p. 378), the weak version can be defined as a "hypothesis [that] states that language differentially favors some thought processes over others, to the point that a thought that is easily expressed in one language might virtually never be developed by speakers of another language." Note that the ability to translate one language into another is incompatible with the strong version of the linguistic relativity hypothesis. Simultaneously, though, the recognized difficulties in translation offer support for the weak version of the linguistic relativity hypothesis.

Although intuitively logical, the weak version of the linguistic relativity hypothesis is difficult to test empirically. The hypothesis is quite broad since it links language structure to cognition, both of which are very general and leave room for different interpretations and operationalizations. Testing the hypothesis requires precise measurements of both the independent variable (language structure) and the dependent variable (cognition). Two main problems arise in testing the hypothesis. First, there is a tendency to identify differences in languages only at the lexical level, not the structural level. Second, it is difficult to measure the independent variable in a manner that is separate from a linguistic expression of thought. The use of verbal responses to measure thought or the use of verbal stimuli to represent the reality about which thoughts are collected confounds the dependent and independent variables. Consequently, it is very difficult to empirically test the linguistic relativity hypothesis through traditional hypothetico-deductive research since culture and language are so intimately related. Because of this confounding, Hill and Mannheim (1992) argued that the Whorfian hypothesis is not a hypothesis but an axiom (i.e., a fundamental, unprovable statement that cannot be deduced from other statements).[1]

Whorf did not describe and measure individual thoughts or behaviors that he could directly relate to the grammatical differences he observed across languages. Rather, he mainly (albeit not exclusively) referred to patterns or differences in language structures that in turn appeared to differentially affect cognitions or behavior. However, because he used the existence of different linguistic expressions to demonstrate the existence of different cognitions or behaviors, his demonstrations have been termed circular (Lyon, 1999). It is clear from his writings, though, that Whorf's goal was not to prove his hypothesis (principle) through individual-level observations and tests of causality but to build a theory and substantiate it through the use of detailed examples comparing language structures and their consequences on cognitive or behavioral patterns at the aggregate level. As Lucy (1992a, p. 61) observed, "Although the logic of his [Whorf's] argument is sound, a certain degree of plausibility has been sacrificed in seeking to demonstrate significance."

The linguistic relativity hypothesis has had a significant influence on anthropological, linguistic, philosophical, and psychological research during the past fifty years. Numerous laboratory experiments and empirical cross-linguistic research studies have been conducted, often leading to mixed or controversial results. Oversimplifying somewhat, there have been different phases marked by major research results either confirming or discrediting the linguistic relativity hypothesis. These phases have paralleled what Carruthers and Boucher (1998a) called a belief in the "cognitive conception of language" during the 1950s and 1960s, and a belief in the "communicative conception of language" in the 1970s and 1980s. During the first phase, research results were thought to provide strong support for the linguistic relativity hypothesis. In the second phase, the development of cognitive science and the belief in the commonality of human cognition associated with the discovery of significant universals among a vast array of languages led to the belief that the main function of a language is to communicate thought, with thoughts being independent of their transmission and existing prior to their expression.

Beginning in the 1990s there has been a renewed interest in the linguistic relativity hypothesis, with a number of publications appearing in different disciplines (e.g., Bowerman and Levinson, 2001; Carruthers and Boucher, 1998b; Cooper and Spolsky, 1991; Gumperz and Levinson, 1996; Levinson, 2003; Lucy, 1992a, 1992b; Semin and Fiedler, 1992). In general, there seems to be agreement regarding the validity of the weaker version of the linguistic relativity hypothesis (Foss and Hakes, 1978), the notion that language *influences* cognition but does not *determine* it (e.g., Hardin and Banaji, 1993).

Despite this agreement, the large number of publications referring either directly or indirectly to the linguistic relativity hypothesis should not mask the fact that few researchers have actually addressed it empirically (Lucy, 1997). Research concentrating on differences between languages without a direct linkage to psychological constructs or behavior merely tests language diversity, not linguistic relativity. Testing linguistic relativity requires that structural differences among languages be explicitly examined and linked to the psychological constructs of interest. Further, linguistic relativity has to be distinguished from cultural diversity or from the influence of culture on some dependent variable. Culture is a broader concept than language and pertains to a variety of differences among groups. To cite two well-known definitions, culture is "the man-made part of the human environment" (Herskovits, 1948) or "the totality of equivalent and complementary learned meanings maintained by a human population" (Rohner, 1984). It consists of values, roles, norms, symbols, rituals, and other cognitive constructs. Moreover, there may be different languages within a single culture (e.g., within the Chinese culture there are seven main language groups, of which three are major, Mandarin, Wu, and Cantonese), and different cultures may share the same language (e.g., English is spoken in Belize, New Zealand, Singapore, the United States, and other countries).

In direct opposition to the linguistic relativity hypothesis is the belief in language universals. Several linguists (e.g., Chomsky, 1957; Pinker, 1994) have documented various degrees of universality in languages, both in terms of word structure (notions like verbs and nouns) and grammar rules. Chomsky (1965) claimed that children have an inborn knowledge of both substantive and formal linguistic universals that determine language acquisition patterns (also presented as being universal). In his early work, Slobin (1973, 1985) studied language acquisition and children's speech in a cross-cultural context and proposed that an innate capacity exists for language acquisition and construction. He found that children possess a language-making capacity and a set of operating hypotheses used to process linguistic input and organize linguistic material. He also believed that these operating rules were similar across languages, as were the stages of acquiring language.[2]

Support for language universals is also derived from cognitive science research. According to Fodor (1983), the human mind is divided into two parts, central cognition and input and output modules. Input modules include vision, audition, taste, smell, touch, and language; output modules are systems controlling motor activity and language. Language in this view is seen as a universal input or output module that is largely independent of central cognition (cf. Brysbaert, Fias, and Noel, 1998). Cognitive structure is separated from language and is a universal characteristic that provides the cognitive basis for acquiring language. In brief, language acquisition is an important and useful research domain in which to investigate whether language shapes thoughts of infants and children or whether learning a language is a simple operation of mapping words onto acquired concepts (Pinker, 1994).

Language Acquisition

How do children learn a language and master nouns, verbs, grammatical forms like plurals and tenses, and associated meaning at a very early age? Are concepts and categories innate or con-

structed through experience and then simply expressed through a language, or are concepts and categories built through exposure to a language and through its use? If language does influence thinking, do different languages influence it in different ways?

During the 1960s and 1970s, children were generally believed to possess an innate capacity to learn a language such that the development of conceptual abilities allowed language acquisition and use. For example, a number of studies on the acquisition of tense marking explained it in terms of prior acquisition of time concepts (e.g., Bronckart and Sinclair, 1973), and the use of spatial language was viewed as an expression of acquired knowledge about space and time (E. Clark, 1973; Miller and Johnson-Laird, 1976). In other words, semantic development was believed to only reflect prior conceptual capacities. However, the now-documented range of differences in languages (as in spatial language) suggests that children cannot be biologically prepared to envisage all the semantic categories and dimensions of all languages or even those of the particular language to which they are exposed. Why should people be innately sensitive to form if they learn English or sensitive to material if they learn Japanese? Why should people be sensitive to left and right if they learn German but to north and south if they learn Tzeltal?

Over the past twenty years, a growing number of cross-linguistic studies have explored language acquisition by children at a very early age (sometimes before infants can speak) and their possible cognitive consequences. The general conclusion emanating from these studies is largely in favor of linguistic effects on children's cognitions.

More recent research (Imai and Gentner, 1997; Lucy and Gaskins, 2001) uses the count noun (for example, chair or house) versus mass noun (for example, paper or salt) distinction and the differential way in which languages classify concepts and associated words to study language acquisition patterns. Many languages, including Japanese, require an extensive use of numeral quantifiers, as in "a sheet of paper" for counting objects and marking plurals. These numeral quantifiers or classifiers typically provide information about the shape or material properties associated with nouns. Imai and Gentner (1997) studied a classification task using two groups of two-year-old children, an American group and a Japanese group. In both groups, complex objects were treated as objects and words applied to substances were classified according to material. However, the results differed between language groups for simple objects. The American children classified simple objects according to form and considered them as being individualized entities (as their language treats objects). The Japanese children classified simple objects either as objects or as substances (at a level of chance), since their language provides no information in this matter. These results are in accordance with those reported by Lucy (1992b) and Lucy and Gaskins (2001), who obtained similar findings when contrasting Yucatec (a classifier language) and English (a nonclassifier language) among both adults and seven-to-nine-year-old children. Collectively, these findings seem to indicate that cognition is influenced by language structure, even at a very early age.

Behrens (2001) reported the results of a series of studies looking at the acquisition of tense and aspect marking by German children between the ages of one and four. Contrary to the view that cognitive development is a determinant of language development, she found no relationship between the cognitive development of temporal concepts and the use of tense markers. She offered strong evidence for the influence of language-specific properties in the acquisition of tense markers.

The acquisition of space or locative words by children has long been considered a good example of how language is mapped onto preexisting concepts (Slobin, 1973, 1985). Both theoretical and empirical research (e.g., Levine and Carey, 1982; Piaget and Inhelder, 1948) indicates that children do learn about space in a prelinguistic stage and that very young children do have a nonlinguistic understanding of spatial concepts such as in, on, front, and back before they know the words

that express spatial locations or relationships. It has been shown that children speaking different languages acquire spatial prepositions in a consistent order that reflects the way in which spatial concepts are grasped (Johnston and Slobin, 1979). However, Bowerman (1978), Gopnik and Choi (1990), and Schlesinger (1977) demonstrated that semantic spatial categories present in language may be very different, that they play a role in children's conceptualization of space and motion, and that very young children generalize words to new situations by reference to regularities across situations in which adults employ these words.

Languages differ in the way they partition space. In an example comparing English, Dutch, Finnish, and Korean languages, Bowerman (1996) studied the spatial prepositions "in" and "on," prepositions that are among the first spatial words acquired by children under the age of two and traditionally assumed to be learned by children as a simple translation of what had been previously established nonlinguistically through spatial experience. She showed that in English, "in" is associated with containment (such as "putting an apple in a bowl") and "on" with support (such as "putting a cup on the table"). Inferences can be drawn from these simple examples (e.g., "putting a video cassette in its case"). However, such inferences cannot be drawn in other languages, such as Korean, in which two concepts (and two words) for containment exist. In Dutch, the relationships expressed by "on" in English are broken down into three distinct categories.

Bowerman's research implies that, depending on the language employed, children learn different aspects of topological relationships. Hence, children's prelinguistic cognitive abilities may well allow them to recognize some kinds of relationships between objects (such as containment, surface contact, or form of objects), but the children cannot know what properties will be critical for assigning the spatial array to a spatial category in their own language. Bowerman (1996, p. 160) speculated that "the non-linguistic spatial concepts often hypothesized to underlie spatial preposition—e.g., 'containment' and 'support'—lend themselves much more readily to shaping into spatial categories of English than, say, of Tzeltal. In other words, our ideas about plausible 'primitives' in the language of thought may themselves be conditioned by the language we have learned."

Bowerman (1989; Choi and Bowerman, 1991; Bowerman and Choi, 2001) also studied the way in which young English-speaking and Korean-speaking children (between fourteen and thirty-four months of age) used spatial words such as "in," "on," "under," "out," "off," "up," and "down." According to the universality hypothesis, the use of spatial words simply translates prior knowledge and allows encoding operative intelligence. If this were the case, English- and Korean-speaking children, whose languages differ a great deal in the use of spatial prepositions and in the way they are used to classify spatial arrays or relations between objects, should associate spatial words with the same underlying concepts. Linguistic differences should have no effect on the situations that children judge as being similar or dissimilar. In fact, in both languages children younger than two use spatial words accurately but distinguish situations or group situations together as a function of their respective language structures and specificities. Hence, it appears that spatial words draw the attention of very young children to specific spatial properties, situations, or categories, and that spatial thought is influenced by language later in life.

The specific spatial vocabulary in the Mayan language Tzeltal is the basis for the explorations of Brown (2001). The Tzeltal spatial vocabulary is an absolute system similar in some respect to a cardinal system (north/south/east/west). This system requires complex cognitive abilities and is not expected to be understood or used by children under eight or nine years of age. However, Brown showed that children less than four years of age use this system (even if in a restricted manner) and that prior to eight years of age, children use the system for calculating spatial relations in a novel task. After studying another Mayan language (Tzotzil), De León (2001) showed that contrary

to English-speaking children who use words "up" and "down" as soon as the one-word stage of language acquisition, Tzotzil children do not express verticality per se at an early stage. Instead, they use different kinds of verbs indicating posture and static vertical position of objects. These findings seriously challenge the hypothesis that, for biological and universal physical considerations, children map words to naturally preexisting concepts of verticality and vertical motion. Based on a large body of evidence found in studies of spatial language and its relationship with cognition, Levinson (2001) concluded that,

> Languages construct concepts that otherwise might not have been. And that is precisely the added cognitive value of language: it provides 'un-natural concepts,' complex conceptual wholes which connect across natural capacities, and which can be processed as units in working memory, thus vastly increasing the power of our mental computations. . . . When a child learns a language she is undergoing a cognitive revolution, learning to construct new macro-concepts. These macro-concepts which are part of our cultural baggage are precisely the contribution of language to our thinking. (p. 584)

Color, Space, and Sound Research

If the universalistic perspective is correct, human perceptions and cognitions regarding observable and objective stimuli such as colors, space, or sounds should be independent of language because the characteristics of such stimuli are determined by the nature of the physical world (e.g., wave lengths, hue, brightness, saturation, three-dimensional space, gravity) and physiology. Therefore, empirical tests of the relationships between linguistic structure and color, space, or sound constitute an evaluation of the linguistic relativity hypothesis.

Language and Color

Languages possess different color vocabularies. English has eleven basic color terms (white, black, red, green, yellow, blue, brown, purple, pink, orange, and gray), Russian has twelve, and Setswana, the language spoken in Botswana, has five (Davies, 1998). Many languages lack the lexical distinction between the English denominations of green and blue, instead having a single word that can be translated as "green or blue" (Burgess, Kempton, and MacLaury, 1983). Zuni Indians code the colors "yellow" and "orange" in English with a single term (Lenneberg and Roberts, 1956). In color research, a linguistic variable, the ease of naming a color in a language or the existence of a term denoting a color in a language and its absence in another language, is related to a nonlinguistic cognitive variable such as perceptual recognition memory or perception of similarity between colors. If a statistically significant relationship between the linguistic variable and the nonlinguistic variable is observed, the linguistic relativity hypothesis is supported.

A plethora of studies using color as a stimulus to assess the linguistic relativity hypothesis has been conducted since the pioneering work of Lenneberg (Brown and Lenneberg, 1954; Lenneberg, 1953; Lenneberg and Roberts, 1956). Because early studies (i.e., studies conducted prior to 1969, such as those of Lantz and Stefflre [1964] or Stefflre, Vales, and Morley [1966]) consistently reported significant correlations between the linguistic coding of colors and recognition memory of colors, they have been interpreted as supporting the linguistic relativity hypothesis. However, a second, later set of color studies (e.g., Berlin and Kay, 1969; Heider, 1972; Heider and Olivier, 1972; Kay and McDaniel, 1978) did not support the linguistic relativity hypothesis. In general, these studies found that the physical properties of colors determine perception (and thus memorability),

rather than linguistic variations, and criticized the results of previous studies on methodological grounds, including the lack of control over color focality.[3]

More recent color research (e.g., Davies, 1998; Davies and Corbett, 1997; Davies et al., 1998; Garro, 1986; Kay and Kempton, 1984; Lucy and Shweder, 1979, 1988; Özgen and Davies, 2002; Pilling and Davies, 2004; Roberson, Davies, and Davidoff, 2000) that attempted to overcome previous methodological deficiencies typically found that language plays a role in perceptual processing and in memory (albeit a limited one; see, for example, Delgado [2004] and Kay and Maffi [1999]).

At best, color research represents a limited test (and probably not the most important) of the linguistic relativity hypothesis (cf. Fishman, 1980; Schlesinger, 1991). Language has traditionally been operationalized in terms of the number of color words available (or the presence/absence of a particular color word), and although this permits controlled empirical testing, it effectively ignores the role of grammatical structures that underlie the linguistic relativity hypothesis. Similarly, cognition in color research has been traditionally operationalized through the concepts of (recognition) memory, perception, and categorization. These operationalizations also are quite distant from Whorf's hypothesis of the effect of language on habitual thought and behavior. Again, however, such operationalizations must be traded off against the ability to conduct controlled empirical testing. Even given these limitations, though, there seems to be support in the color research literature for the influence of linguistic structure on cognition.

Language and Space

Space is a universal concept and possesses such intrinsic properties as being continuous and stretching in three dimensions. The conceptualization of space is central to cognition, mobility, and communication, and has been studied from a variety of perspectives, including time, mathematics, and aesthetics. In general, the conceptualization of space is constrained by biology (top-bottom and front-back asymmetry, lateral symmetry, upright posture) and by the physical environment, which in turn is constrained by significant gravitational forces (E. Clark, 1973).

Miller and Johnson-Laird (1976) posited that native-language spatial descriptions are fundamentally self-centered such that with the self as the origin, an individual lays out a three-dimensional coordinate system that is used to locate objects as lying above or below, in front or in back of, and to the left or right of the self. The origin can be shifted to other objects in order to express relative position, such as "in front of the car." Consequently, spatial descriptions should be universal or at least linguistic differences should be minor and not impact spatial cognition or associated behaviors.

However, anthropological research (e.g., Bowerman, 1996; Haviland, 1993; Levinson, 1996a, 1996b, 1997, 2003) has shown that this is not the case. For example, Levinson (1996b, 1997) studied the conceptualization and description of space in two non–Indo-European languages, namely the Tzeltal Mayan language in Central America and the Guugu Yimithirr language (hereafter GY) in North Queensland, Australia. He showed that these two languages have systems of spatial conceptualization and description that are totally different from those present in the English language. GY speakers do not have a system of relativistic space in which an object is located by reference to the self (or another object) according to its orientation (e.g., "behind the building"). Instead, they use an absolute orientation system. Thus, the notions of "in front of," "behind," "to the right of," and so forth do not exist for, and make no sense to, GY speakers. Object locations are described using terminology such as "to the north of" or "to the east of."

Such a spatial language has far-reaching cognitive and behavioral consequences. Spatial experi-

ences need to be memorized in a way that is congruent with linguistic coding so that they may be later referred to or communicated. It has been demonstrated empirically (Levinson, 1997) that GY speakers are absolutely oriented at all times. During travel, they are able to estimate the directions of locations with an average error less than fourteen degrees, or less than 4 percent. Comparable data from Dutch study participants revealed that they indicated directions of locations little better than chance. Also, less than half of the British individuals studied judged locations to be in the correct (ninety degrees) quadrant.

Levinson (1997) also studied GY speakers and Dutch speakers for recognition memory, recall, and inferential processes in a series of empirical tests. One test showed that when GY speakers facing north chose a card with (say) a red chip on its left (to the west) and were asked to select the same card among two when facing to the south, they again chose the card with the red chip to the west (this time on its right). This was the case for twenty-seven of thirty-four trials. The same test conducted among Dutch speakers showed that, in forty-four of forty-five trials, these individuals chose the card according to a relative spatial orientation (for example, red chip to the right whatever the cardinal spatial orientation of the body). In brief, Levinson's research suggests that spatial language has an influence on cognitive style, spatial behavior, and even gestures that accompany speech.

Mayan Indians speaking Tzeltal also use absolute or fixed angles of orientation with reference to a fixed uphill/downhill inclined plane (which in fact corresponds to a south/north axis that is so inclined in their environment). This has the same cognitive consequences as noted for the GY speakers. Tzeltal offers a system of spatial description that includes the distance of one object relative to a second object and a description of the shape of the object being located. As such, it indicates the direction and form of an object to look for rather than simply the direction of the object to look for with respect to a reference point (whether the self or some other reference object). Thus, the concept of three-dimensional space does not make sense in Tzeltal.

Spatial description in Tzeltal has been shown to be related to the cognitive propensity of Tzeltal speakers to confuse an image and its mirror image. Indeed, in one study conducted by Levinson (1996b), left-right inversions in photographs were not noticed by Tzeltal speakers, although other distinctions were readily noticed. Generally, the description of an object in Tzeltal does not permit distinguishing between the object and its mirror image because the position concepts of right and left are ignored.

Following the work of Levinson, other authors (e.g., Mishra, Dasen, and Niraula, 2003; Niraula and Mishra, 2001; Wassmann and Dasen, 1998) have studied the influence of spatial language on cognition using languages such as Balinese, Nepalese, and Hindi that have absolute frames of reference. Findings from these studies also support a hypothesis of linguistic relativism at the group level.

Language and Sound

Sound perception is another domain in which the influence of basic, universal physiological properties should dominate the influence of language. However, as previously discussed, language reduces the likelihood of distinguishing between sounds that are not differentiated in an individual's native language. For example, Japanese speakers do not differentiate between the English sounds of "l" and "r" because this distinction does not exist in Japanese (Miyawaki et al., 1975). English speakers do not discriminate among the Vietnamese "d," "t," and "th" or between the Serbian or Croatian sounds "Đ" and "Dž" or "Č" and "Ć." Nor do they perceive the distinctions between retroflex and dental stops that exist in Hindi. Language thus influences categorical phonetic perception.

Very young infants can discriminate any kind of audible speech sound, but before the age of one their ability to discriminate among sounds that are not distinguished in their native language diminishes. This loss in discrimination is not caused by any loss of auditory sensitivity but rather by the organization of the categories of communicative sounds transmitted by the language they hear (Kuhl et al., 1992; Werker, 1991). More specifically, Best, McRoberts, and Sithole (1988) demonstrated that the ability to perceive differences in sounds remains intact for distinctions that do not exist in one's native language, but only if these distinctions are not preempted by any native language contrast. Therefore, the ability to discriminate is not physiological but linked to linguistic processing. Such phonological effects are instances of categorical perception wherein the sound structure of the language affects auditory perception (Hill and Mannheim, 1992).

Several theories account for perception of nonnatural speech sounds. For example, Best's (1994) perceptual assimilation model postulates that if the phonetic characteristics of a foreign sound are close to those of an existing phoneme category in one's first language, then the foreign sound will be assimilated into that category. This assimilation precludes any further distinction between the two sounds. If the foreign sound is distant from any of the existing categories, it cannot be assimilated. Listeners will then have full access to its phonetic characteristics.

Languages differ in their phonemic repertoire but also in the sequences of phonemes that are allowed in an utterance (Massaro and Cohen, 1983), and people tend to hear (and utter) segments that conform to the sound sequences of their native language. For example, Spanish "s + consonant" clusters are always preceded by a vowel (such as in "especial"). Dupoux and colleagues (1999) reported that Spanish speakers of English sometimes hear and therefore produce "especial" instead of "special" or "esport" instead of "sport" because of the sound structure properties of Spanish. After comparing French and Japanese listeners, Dupoux and colleagues (1999) found that Japanese consistently perceived a nonuttered vowel inside consonant clusters (they heard "ebuzo" when "ebzo" was uttered) because of the sound structure properties of the Japanese language.

Apart from sound discrimination, another effect of language on auditory perception is the use of specific language-based segmentation procedures. Speech recognition is based on the ability to recognize individual words in a spoken (usually continuous) utterance. Word recognition in memory in turn gives access to meaning.

Languages differ in the segmentation procedures they imply, and these procedures are closely linked to the rhythms of the languages. English speakers use the stress rhythm since strong syllables are generally at the beginning of a word (Cutler and Butterfield, 1992). French speakers employ syllabic segmentation and Japanese speakers segment their language on the basis of the mora (a phonological unit that is the unit of rhythm in Japanese). Several studies (e.g., Cutler et al., 1986; Cutler and Otake, 1994; Otake et al., 1993) have shown that individuals apply the segmentation procedure of their native language when listening to speakers using another language. Thus, French-speaking individuals use syllabic segmentation when exposed to English or Japanese. Japanese-speaking individuals apply mora segmentation when exposed to English or French, and English-speaking individuals use the stress rhythm to segment French or Japanese. In brief, this line of research reveals that speech processing is influenced by language-specific patterns, with native language rhythms determining segmentation strategies.

Studies in cognitive neuroscience confirm that sound processing is influenced by language (Binder et al., 1997). In order to test whether perceptual effects on brain processing are acoustic or linguistic, Gandour and colleagues (2000) conducted a cross-linguistic study involving English-, Chinese-, and Thai-speaking study participants. Study participants were exposed to Thai word tones (the linguistic condition) and to sounds (nonwords) matching the same pitch patterns (the nonlinguistic condition). Using positron emission tomography to measure brain activation, the

researchers showed that brain activation in a particular area of the cortex (the Broca area in the left hemisphere) occurred only for Thai study participants in the linguistic condition. Homologous pitch patterns in the nonlinguistic condition did not result in similar brain activation for Thai study participants. Also, the Broca area was not activated for Chinese and English study participants regardless of condition (linguistic or nonlinguistic) since they did not know the Thai language. Because Mandarin Chinese possesses the same type of sounds as Thai, this suggests that differences in brain activation are not linked to habituation to a type of sound. Instead, brain activation patterns differed across languages as well as within Thai study participants across linguistic conditions. Based on these results, it appears that the observed lateralization effect (activation of the left hemisphere) is linguistic in nature.

In brief, although the respective meanings of color, space, and sound would intuitively appear to be unaffected by language, this does not seem to be the case. People think of colors and spatial concepts using frames of reference provided by languages, and they perceive phonetic distinctions as structured by language. As Levinson (1996a, p. 374) observed, "There are at least some grounds for thinking that language plays a causal role in the relevant cognitive specializations." It is interesting that in the domains of color, space, and sound, where universalistic theories have traditionally prevailed, recent investigations involving languages that depart from Indo-European languages tend to support the linguistic relativity hypothesis. Far from being anecdotal, these investigations demonstrate that Whorfian effects can be found even in domains where they are not expected.

Language and Cognition

Color, space, and sound studies have shown that linguistic structure has various direct effects on cognition (perception, memory, categorization) and indirect effects on behavior. Research results are now presented that give additional support for the influence of linguistic structure on perception and memory as well as judgment and choice.

Grammatical Structure

Lucy (1992b) studied the impact of differences in the grammatical treatment of number marking between Yucatec Maya and English on habitual thought measured through simple cognitive tasks such as attention, memory, and classification. Recall that Yucatec (analogous to Japanese or Chinese) is a classifier language, whereas English is not. Yucatec and English differ as to what nouns require obligatory plural marking and in the way they signal plural for nouns. English signals plural for both animate entities and objects but not for substances. Words for substances (mass nouns) cannot be modified by a number (not: "two cottons") because they lack specification of unit. A unit must be explicitly specified by some form (e.g., "two balls of cotton"). Yucatec optionally signals plural for a small number of nouns (animate entities); all other nouns (including discrete objects) require the use of a numeral classifier to be pluralized or counted. These nouns are grammatically treated as if they referred to substances.

Numeral classifiers provide essential information concerning the form or the composition of the referent of the noun. For example, if a classifier equivalent to "long thin unit" characterizes a noun equivalent to wax, it refers to a "long thin unit made of wax," which is expressed by the English word "candle." Using that numeral classifier, Yucatec speakers can then count "three long thin units made of wax."

Due to the fact that plural is more obligatory in English than in Yucatec, Lucy hypothesized

that English speakers should habitually attend to the number of various objects more than should Yucatec speakers and should attend to number for a wider array of referent types. More specifically, English speakers were hypothesized to pay attention to number for both animals and implements for which they obligatorily mark number, whereas Yucatec speakers were hypothesized to pay attention to number for animals only. Further, due to the difference in grammatical treatment of implements, Lucy hypothesized that English speakers should attend more to the shape of objects (which is the basis of unitization in English) than should Yucatec speakers. Yucatec speakers should attend more to the material composition of objects than should English speakers (since objects are treated as mass nouns and require a descriptive numeral classifier to be unitized).

Lucy (1992b) designed a number of picture stimuli, including specific numbers and types of objects (animals, implement containers, implement tools) as well as substances to assess cognitive sensitivity to numbers (unity versus many). Interrelated tasks were used to measure attention and recall memory (verbal tasks), classification, and recognition memory (nonverbal tasks). The findings systematically showed how a language's grammatical structure influences the cognitive responses of its speakers. English and Yucatec speakers treated animals and substances in the same manner (as does the grammar in the two languages). Simultaneously, though, responses relating to implements differed significantly. Differences for implements related to both the salience of number (salient for English speakers and nonsalient for Yucatec speakers) and in the manner in which they were referred to (mostly shape for English speakers and mostly material for Yucatec speakers). Because the results were obtained in diverse tasks involving different cognitive activities, they indicate that patterns of pluralization and number marking in each language influence both the verbal and nonverbal interpretation of pictures and nonverbal interpretation of objects.

In more recent extensions, Lucy and Gaskins (2001) redesigned experimental conditions in order to control stimulus material for color, size, and function. The shape preferences of English speakers and material preferences of Yucatec speakers reported in the original study were replicated and proved robust. A new and more complex classification task was also designed and gave even stronger contrasting results (see Lucy and Gaskins, 2001, pp. 269–272 for methodological details).

Using the same linguistic grammatical construction as Lucy (1992b) and Imai and Gentner (1997), Schmitt and Zhang (1998) contrasted two classifier languages (Chinese and Japanese) and a nonclassifier one (English) and studied the effect of classifiers on consumer cognition, judgment, and choice. Results confirmed previous research findings and indicated that classifiers are cues used to categorize objects and that their existence in language affects the perceived similarity of objects. Schmitt and Zhang (1998) also investigated the effect of classifiers on choice. English- and Chinese-speaking study participants were administered a scenario in which they were to choose a gift from among three alternatives. After being told that the recipient would most (least) prefer one of the alternatives (the referent alternative) but that the alternative was out of stock, study participants chose between the two remaining alternatives. One of the alternatives shared a classifier with the referent but unavailable alternative. If classifiers have an impact on choice, the Chinese-speaking study participants should choose the alternative sharing the classifier with the referent when it is most preferred, but not choose the alternative sharing the classifier with the referent when it is least preferred. English-speaking study participants' choice should be unaffected by the experimental conditions. Results confirmed the expected behaviors and showed that the grammatical structure of language (here, the existence of classifiers) affected choice.

Another grammatical construction that varies across languages is the gender system through which nouns are classified in gender categories (such as feminine, masculine, or neutral). It has been shown that congruent gender marking (for instance, between the article, the adjective, and

the noun as in "une belle maison" in French or "das schöne Haus" in German) favors information processing, whereas gender disagreement inhibits it (Friederici and Jacobsen, 1999; Jakubowicz and Faussart, 1998).

Product categories are often associated with gender stereotypes (the gender of the typical user), such that beer is considered masculine and white wine is considered feminine. This is the semantic gender of the category. (Note that in formal gender languages, such as Spanish or French, product categories also have a formal gender. For example, beer is feminine in both Spanish ("cerveza") and French ("bière"). Brand names (as given names) may also convey gender information, typically through their ending vowel, such as "a" for feminine names like Laura or "o" for masculine names like Romeo.

Yorkston and De Mello (2005) tested the effect of gender agreement between a brand name and its associated product class on brand encoding and brand attitude formation in Spanish and English, two languages differing in gender systems. Through a series of experiments involving congruent and incongruent brand name genders and product category genders, they showed that gender markers attached to products and brand names affect consumers' cognitions, namely, categorization, retrieval, recall, and brand attitudes. They also demonstrated cognitive processing differences between speakers of a semantic gender system language (English) and speakers of a formal gender system language (Spanish). Beyond another demonstration of language effects on cognition, their study possesses interesting marketing implications in the domains of branding, communication, and brand attitude formation.

Language Scripts

Many Asian languages (e.g., Chinese, Japanese, Korean) use logographic characters that are associated with a meaning rather than with a sound. By contrast, alphabetic characters are used in languages written with the Latin alphabet (e.g., English, French, Portuguese), the Cyrillic alphabet (e.g., Russian, Serbian), or the Arabic alphabet (e.g., Tunisian, Koweitian). In these languages, alphabetical symbols and combinations thereof are associated with sounds.

After early work by Turnage and McGinnies (1979), and building on Chen and Juola (1982), Schmitt, Pan, and Tavassoli (1994) explored the influence of dissimilarity in English and Chinese scripts on consumer brand memory. The English language is written using the Latin alphabet, whereas the Chinese language is written through a system of ideographs. In English, the pronunciation of a word is closely linked to the spelling of the word, but in Chinese, the characters used to represent a word offer no guidance for pronunciation. Although written words might be encoded both phonologically and visually in both languages, there are indications that when exposed to a written word, English speakers primarily code visual information phonologically but do not usually code a spoken word visually. Chinese speakers rely more on encoding written words visually to access meaning. They also tend to recode auditory information visually. Hence, English speakers rely primarily on phonological coding, whereas Chinese speakers rely primarily on visual coding. Because of this difference, Schmitt, Pan, and Tavassoli (1994) showed that Chinese-speaking study participants had a higher recall of brand names when they were asked to write them rather than speak them, and that the reverse held for English-speaking study participants. Therefore, structural differences in the scripts of the two languages have an impact on mental representations (visual or phonological), which in turn influence memory.

Tavassoli (1999) extended these results and found that linguistic script differences between English and Chinese affect the representation of verbal information in memory as well as the manner in which words are organized and retrieved from memory. In particular, he found that

language affects the encoding of the temporal order of verbal information (temporal memory for Chinese-speaking study participants was significantly lower than for English-speaking study participants). Chinese-speaking study participants retrieved words from memory based more on inter-item semantic associations and less on temporal information than did English-speaking study participants, and there was a larger primacy effect in recalling English words compared to Chinese words. The results are interesting in that they imply that language affects the representation and storage of information in memory and the nature of information processing.

Pan and Schmitt (1996) explored the effect of script and sound cues on brand attitudes. Because the script of a brand as well as the sound of the brand name and a speaker's voice in an advertising context are cues that might influence attitudes toward the brand, there should be a positive influence if script (sound) associations are congruent (or if there is a fit) with brand associations. Pan and Schmitt found that a fit between script associations and brand associations ("script matching") affected brand attitudes of Chinese-speaking study participants but not those of English-speaking study participants, and that a fit between sound associations and brand associations ("sound matching") affected brand attitudes of English-speaking study participants but not those of Chinese-speaking study participants. Interaction effects revealed the influence of language on brand attitudes.

In further extensions and applications, Tavassoli and Han (2001, 2002) and Tavassoli and Lee (2003, 2004) showed how differences in processing alphabetic or logographic scripts may have implications for central cognitive processes in that they impact the effect of attribute order on judgment, product evaluation, and purchase intention. They drew practical marketing implications for branding (the use of visual and/or auditory brand identifiers) and advertising (the use and impact of visual and auditory cues in advertisement design).

Language Labels and Cognitive Schemata

What is really at issue with the linguistic relativity hypothesis is the way in which language affects the interpretation of the world beyond the type of information processing it implies. This section summarizes studies that demonstrate how language labels affect interpretations. In so doing, the effects of language on attitudes and behaviors are illustrated.

Several studies show how the development of cognitive schemata through language might affect inferences and attitudes. The cognitive structuralist view is that individuals build mental schemata in order to divide the world cognitively into types of objects, actions, relations, and properties. These schemata facilitate the recognition and construction of representations of situations encountered that permit the identification of, and inferences regarding, alternative sets of actions. For instance, the category represented by the word "dog" is certainly not one for which a child would develop, on his or her own, an appropriate schema. This category is neither very coherent (due to the numerous varieties of sizes, shapes, and colors of dogs) nor very readily distinguishable from other similar animal categories (coyotes, foxes, wolves).

Linguistic labels help in constructing cognitive schemata through which the world is interpreted and information is processed. The specific cognitive integrations created with the help of language (such as the word "bachelor," which allows the integration of the notions of man, unmarried, never married, adult, and probably other associations) are then very simple to use because cognitive effort is limited to accessing one concept and not all of its various components.

Hoffman, Lau, and Johnson (1986) studied labeled schemata for personality traits. Languages vary in their codification of individual differences and in the existence of labeled schemata for personality types. The question Hoffman, Lau, and Johnson explored was whether the existence of

a label for a personality type affects cognitive responses when one encounters a person exhibiting the characteristics of that personality type. They hypothesized that the existence of a precise label will favor access to a cognitive schema corresponding to the personality type and induce cognitive responses associated with schematic processing. To test their hypothesis, they created two personality descriptions for which there is an associated label in English but not in Chinese and two other descriptions for which there is a label in Chinese but not in English. These descriptions were shown to respective samples of English-only speakers and Chinese-English bilinguals, with the bilinguals randomly assigned to an English-language or Chinese-language condition.

Five days after being exposed to the descriptions, study participants provided their impressions of the personalities of the individuals being described, responded to recall and recognition questions about the individuals' descriptions, and made inferences regarding the individuals' personality traits and behaviors. The results showed that when the description of an individual was processed in the language in which a label exists, schematic processing occurred. Bilinguals in the Chinese-language condition used Chinese stereotypes when available; bilinguals in the English-language condition used English stereotypes. Access to a labeled schema permitted study participants to make strong schema-congruent inferences about the individuals. Hence, it appears that the availability of a label led study participants to rely on their schematic knowledge of the labeled personality type, rather than to concentrate on the details to which they had been exposed. In other words, reliance on cognitive integration created by language reduced cognitive effort.

Number schema is another area in which the influence of linguistic structure on cognition has been explored. There are many different counting systems, including a body-part system used in Oksapimin, a language of New Guinea, in which numbers correspond to a part of the body (Saxe, 1981). There are also various naming structures within more habitual number systems using base ten (Arabic numerals). Cross-national comparisons of mathematics performances show large differences in favor of Asian children compared to U.S. or European children (Stevenson, Lee, and Stigler, 1986). Although educational context might vary across countries and explain some of the reported differences (Stigler et al., 1982), variations in mathematical achievements are already apparent at preschool levels (Miller and Stigler, 1987). Some of these variations may be due to different number-naming systems or differences in the cognitive representation of numbers (Miura et al., 1988). If this were true, it would indicate that language influences number-related abilities.

Asian languages (e.g., Chinese, Japanese, Korean) have transparent and logical systems of number names. They have numbers from one to ten, and subsequent number names are simple combinations of these ten basic number names, starting with the decade and followed by the unit value. Hence, eleven would be literally represented by "ten-one" and twelve by "ten-two." Following the same logic, twenty would be represented by "two-ten" and twenty-four by "two-ten-four." This system is linguistically close to the base ten system and can be contrasted with the number names used in Indo-European languages. Apart from numbers one to ten, the latter languages require learning numbers eleven to nineteen and also decade names (e.g., "twenty" or "thirty"). Numbers greater than twenty are specified by the name of the decade followed by the name of the unit (as in twenty-two). Note that some languages require additional learning. French (as spoken in France but not in Belgium or Switzerland) basically follows the above-mentioned rule for decades (twenty-nine is "vingt neuf" and is followed by "trente" or thirty). However, for two decades, seventy and ninety, sixty-nine is respectively followed by, literally, "sixty-ten, sixty-eleven," and so on, and eighty-nine is followed by "eighty-ten," eighty-eleven," and so forth.

Miller and Stigler (1987) compared counting skills of American and Taiwanese preschoolers by testing their abilities for abstract counting and object counting. The American children made significantly more errors in abstract counting than did the Taiwanese children. The types of errors

were also different, with the American children making substantially more errors in the "teens," in the production of nonstandard numbers (such as "thirty-twelve"), and in skipping numbers. The nature of these errors suggests that they might be explained by language differences. Nonstandard numbers correspond to the lack of logic in the production of the teens; other errors are probably linked to the fact that American children have more numbers to learn than Taiwanese children.

Miura (1987) studied the cognitive representation of numbers among American children and Japanese bilingual (Japanese/English) children. In particular, she compared the place value understanding of children (the ability to discriminate between the tens and the units in a two-digit numeral) or the ability to use a base ten representation of numbers. When children were asked to reconstruct a two-digit number with two types of blocks that stood for tens or units, the Japanese children were more likely to use both the ten and the unit blocks (indicating reliance on a base ten cognitive representation) than were the American children, who were more likely to represent the numbers by an equivalent amount of unit blocks. These results were confirmed by Miura and Okamoto (1989), who contrasted results obtained by American and Japanese first graders.

Miura and colleagues (1993) compared the cognitive representation of numbers across five countries (France, Japan, Korea, Sweden, and the United States). The results were consistent with those obtained previously and also revealed a systematic difference between Asian and Indo-European languages. Thus, the finding that cognitive representation of numbers varies across groups of languages supports the hypothesis that the structural characteristics of numerical language influences number cognition, which in turn contributes to understanding and carrying out mathematical activities.

Language and Emotions

By their very nature, psychological constructs imply the existence of a universality principle. Among psychological constructs that have received the most attention from a multicultural or multilinguistic perspective are those of emotion and personality. It seems logical to assume that all humans possess emotions and that personality types or personality dimensions are fundamental to everyone. Further, it is logical to assume that emotions and personality dimensions exist independently of culture and language. However, this does not appear to be the case, especially for emotions.

There is virtual consensus that emotions influence such psychological constructs as attention and perception, attitudes, cognitions, memory, and persuasibility (e.g., Bagozzi, Gopinath, and Nyer, 1999; Cacioppo and Gardner, 1999; Johnson and Stewart, 2005). Moreover, research on emotional intelligence (Langhorn, 2004; Mayer and Salovey, 1993; Mayer, Salovey, and Caruso, 2004) demonstrates that the ability to understand emotions is important for decision making.

Even so, there is a fundamental debate as to whether the basic structure of emotions is the same among all humans or whether emotions and their facial or linguistic expressions are linked to cultural identity and language (Moore et al., 1999). Several researchers (e.g., Ekman, 1992, 1993, 1994; Izard, 1971, 1992; Lazarus, 1995) have argued that basic emotions, such as anger, disgust, fear, surprise, sadness, and joy, are experienced by all humans. In particular, they have argued that, based on the study of facial expressions associated with emotions, there are a limited number of basic, biologically based (universal) emotions. Other researchers (e.g., Kitayama and Ishii, 2002; Kitayama and Markus, 1994; Triandis, 1994; Wierzbicka, 1994, 1995) claim that emotions are closely linked to both culture and language. These researchers view emotions as socially constructed categories rather than biological states.

This section of the chapter briefly reviews research that collectively suggests language may

influence the very concept of emotion (what it is and what it encompasses), and that terms used to describe emotions as well as other aspects of language, such as grammar and structure, might shape the way emotions are experienced, naturally communicated, and researched. In the review a distinction is made between (1) the influence of the wording of emotions and (2) the influence of structural aspects of language on the construct of emotion.

Emotion Terms

As in many other domains of psychology or consumer behavior, the "language of emotion" has created problems when researching emotions in different cultures and languages. Some emotions seem to be so specific to a language (or culture) that no translation equivalent or close equivalent term is found in another language. The concept of "amae," a "particularly Japanese emotion," is highly culture-specific and is virtually untranslatable. Wierzbicka (1995) provided similar examples in many other languages, including Russian, Ilongot (a Filipino language), and Pintupi in Central Australia.

Wierzbicka (1995; Harkins and Wierzbicka, 1997) also stressed the danger of ethnocentrism when studying emotions using English terms. Such use generally assumes that the experience or the concept denoted by an emotion term exists universally and is exactly the same in different cultures or languages. In this regard, Wierzbicka (1986, 1995) criticized Lazarus (1991), who proposed that the emotion of anger has a universal cause, namely, having been slighted or demeaned, regardless of language and culture. She argued that "anger" (the English word) has no universal significance and that the closest non-English words, "rabbia" in Italian, "liget" in Ilongot, "song" in Ifaluk (a Micromesian language), and "sheng/xi" in Chinese, have different connotations and correspond to different appraisals. She also illustrated the danger of ethnocentricism by suggesting that a Polish researcher would not consider disgust as a universal emotion since there are no emotion terms equivalent to disgust in the Polish language.

After comparing emotion terms in relatively closely related languages, such as English and French, Wierzbicka (1995) argued for significant differences between basic feelings like "disgust" and its translation equivalent "dégoût." The French word *dégoût* is more directly associated with the senses of taste and odor and might in some cases be closer to the English word "dislike." When comparing English to more distant languages, differences between translation equivalents are even more striking. For example, the Ilongot term "liget" translates as anger in some contexts (hunting and fighting) but not in others. In Ifaluk, the term "song" is not directed at a wrongdoer as is the word "anger." In Malay, "angry" translates into "marah" but actually denotes something closer to "offended." Finally, the meaning of emotion terms might even be different between speakers of the same language, such as when comparing speakers of Australian Aboriginal English to other English-speaking groups.

However, Church and colleagues (1998) found that the nature and range of emotion language of Filipino and English speakers are similar, although there are many more emotion-related lexicons in English (more than 500) than in Filipino (256), and that Filipino clusters of emotion words show "some resemblance to those in other languages" (p. 83). However, "some resemblance" can only be considered a minimal condition to ensure that identical conceptual domains are being studied. What is quite surprising are the considerable differences in the size of emotion lexicons found in different studies: 58 in Ifaluk (Lutz, 1982), 230 in Malay (Boucher, 1979) and Indonesian (Heider, 1991), 235 in German (Gehm and Scherer, 1988), around 500 in English (Clore, Ortony, and Foss, 1987; Storm and Storm, 1987), and 750 in Chinese (Boucher, 1979). Although some differences in lexicon size might be affected by conceptual and experimental conditions, the effect of language on emotion lexicon size certainly exists.

Wierzbicka (1995) suggested that the feeling involved in the emotions described by different culturally rooted words might be the same but that languages distinguish the way (when and because of what) emotions are felt and expressed. In that regard, numerous researchers, including Frijda (1986), Fridja and colleagues (1995), Harkins (1996), Harre (1986), and Wierzbicka (1992), have stated that the concept of emotion must include situational and cognitive elements as well as mere feelings. Similarly, in the context of appraisal theory, Johnson and Stewart (2005) proposed that the concept of emotion should include antecedents of the appraisal process, the process of appraising information, and the consequences of the appraisal.

An interesting study of emotion terms is that of Kobayashi, Schallert, and Ogren (2003), who investigated labeling and grouping of emotion terms by Japanese and Americans. They concluded that the very concept of emotion may not be culturally stable and that language is a critical issue in cross-cultural studies of emotions due to the problematic translation of emotion terms. Russell and Sato (1995) attempted to identify translation-equivalent terms for selected emotions across American English, Cantonese Chinese, and Japanese. To guard against their personal biases, they asked samples of people representing a large array of ages and educational backgrounds to generate and then classify emotion terms; they then studied similarities and dissimilarities in the conceptualization (and wording) of emotions in pairs of languages (e.g., Japanese and American English). They found both similarities and dissimilarities in the labeling and conceptualization of emotions when comparing the Japanese language with the American-English language. In both languages, terms (e.g., physical sensations and evaluative reactions) appeared that are not generally considered to be emotion terms. However, there were many more such Japanese terms than American-English terms that would not have been traditionally classified as emotions (including a category of behavioral descriptors in Japanese). This implies that the emotion category itself might vary across languages. A second finding was the difference between languages in the ways in which emotion terms were grouped by study participants. What is of particular interest is that translation equivalents were associated with very different terms (both in number and nature). This suggests that the analysis of emotions needs to explore meanings and associations beyond what are generally considered equivalent emotion terms (such as "angry" in English and "okotte iru" in Japanese).

If emotion terms are considered labels for states of being or experiences (Niedenthal et al., 2004), they should both influence and constrain emotional experiences. The existence and use of an emotion term in one language, such as "colère" in French, which is not a proper translation equivalent of "anger" in English (Wierzbicka, 1988), or "blue" in English, which is not related to "kimochi ga shizunde" in Japanese (Kobayashi, Schallert, and Ogren, 2003), will respectively enable the existence, communication, and manifestation of an emotion state in that language, but not in other languages. Along this line of thought, Halberstadt and Niedenthal (2001) demonstrated that explaining emotional expressions using specific emotion concepts at encoding biases perceptual memory for those expressions. This indicates that the naming of emotions (even if they do correspond to a culturally based perceptual experience) will influence the way of perceiving, thinking about, communicating, and probably reacting to a particular emotion.

Language Structure and Emotions

Beyond the meaning and situations that emotion terms convey, it appears that the structure of languages (e.g., grammar, diminutives, verb forms) may or may not allow the expression (and therefore the manifestation and existence) of particular emotions. Wierzbicka (1992) demonstrated

that the structure of the Russian language enables communication of many emotions and shades of emotions with the use of the reflexive suffix "-sya" in the majority of Russian emotion verbs or through the use of dative verb forms. Derivatives and diminutives (in various languages such as Russian or French) applied to people's names or adjectives also enable the expression of a range of subtle emotions difficult to translate in some other languages.

The nature of words used to label or communicate emotions in different languages might affect the concept of emotions. Semin and colleagues (2002) examined whether linguistic representations used to communicate emotions and emotion events vary across cultures. They investigated how people talk about emotions and contrasted Dutch and Hindustani-Surinamese speakers in one study and Dutch and Turkish speakers in another study. Using the linguistic category model (LCM) of Semin and Fiedler (1988, 1991), Semin and colleagues (2002) primarily explored whether emotions are used as relationship markers, which is expected for cultures in which the group is important and where group goals prevail over individual goals, or as self markers, which is expected in more individualistic cultures. The LCM distinguishes concrete language forms (predominantly interpersonal verbs) that should prevail in cultures where group goals and relationships are dominant, from abstract language forms (adjectives, nouns) that should be used when talking about emotions in more individualistic-oriented cultures. The results indicated that the linguistic construction of emotions and emotional events varied across cultures in the direction hypothesized. The Surinamese and Turks used concrete language forms whereas the Dutch used more abstract language forms. Therefore, individuals in interdependent and dependent cultures talk about emotions in different ways.

Although the research of Semin and colleagues (2002) is mainly descriptive of the way in which people talk about and represent emotions in language, the results have far-reaching implications. The manner in which emotions or emotion events are conceptualized is linked to whether and how emotions or emotion events are communicated. In brief, the linguistic structures employed to talk about emotions may well have an impact on what is considered as belonging or not belonging to the domain of emotions (which is known to vary across languages). The language employed also has implications as to what situations are conceptualized as potentially leading to the creation of emotions or behaviors subsequent to experiencing an emotional state. Semin and colleagues (2002, p. 26) suggested that "emotion-talk has stronger action implications in interdependent cultures—namely, to undertake or do things jointly in contrast to an independent context where emotion-talk may simply remain 'analytical talk.'"

It has been suggested that the relative importance of verbal content and vocal tone may differ a great deal across cultures and languages. Specifically, verbal content is important in Western languages, whereas vocal tone plays a minor role. By contrast, vocal tone plays a greater role in some East Asian cultures and languages. Kitayama and Ishii (2002) investigated the effect of language type (low-context: English; high-context: Japanese) on information processing of emotional utterances (emotionally spoken words that have emotional meaning). They predicted that in processing emotional utterances in English, listeners will be predominantly focused on the direct meaning of the emotion utterances and not on contextual cues (here, vocal emotion). They also predicted that in processing emotion utterances in Japanese, listeners will be predominately focused on contextual cues (vocal emotion). The three studies reported by Kitayama and Ishii demonstrated the predicted language effect. Processing systems varied with language; the direct evaluation of word meaning was more important in English than in Japanese, and vocal emotion was more important in Japanese than in English. In general, the research reviewed in this section suggests that language structure affects information processing of verbal and nonverbal emotion information.

Conclusions and Implications

So far, evidence for the influence of language on cognition has shown how a linguistic form (a word, expression, or a grammatical structure) might have an impact on information processing, perception, preference formation, and behavior. This influence has been measured across an array of constructs, including attention, recall and recognition memory (both short term and long term), information encoding and memory retrieval, categorization, similarity, perceptions and inferences, learning processes, brand attitudes and preferences, brand choice, and everyday patterns of behavior. This section of the chapter discusses the implications of these findings for consumer research.

Although admittedly incomplete, the rather eclectic review of voluminous and disparate empirical research literatures reported here leads to an inescapable conclusion. At a minimum, language seems to influence many psychological constructs generally and basic cognitions specifically. As such, the conclusion supports a modified version of the weak form of the linguistic relativity hypothesis, at least for the constructs considered in this review. Thus, one of the goals of this chapter is to stimulate interest in the possible influence of language on consumer behavior and motivate both basic and applied research on language in the context of consumer behavior. (See Luna and Peracchio [2001] for an example of basic research into the relationship of language and memory in the context of advertising, and Koslow, Shamdasani, and Touchstone [1994] for an example of the influence of language on advertising perceptions.)

Certain languages are morphologically more impoverished than other languages, and some languages are more ambiguous than others. Such structural differences imply differential information processing burdens, influence schema choice, and result in different reasoning styles. Thus, languages may facilitate or impede particular cognitive activities like category formation and learning (e.g., Cabrera and Billman, 1996).

The numerous studies reviewed for this chapter employed a variety of research designs and methodologies. Some of the designs and methodologies were found wanting. (See Brysbaert, Fias, and Noel [1998] and Takano [1989] for illustrative criticisms.) The studies addressed a wide variety of linguistic structures and dependent variables under numerous conditions. Some of the languages investigated, such as Tamahurama and Guugu Yimithirr, can perhaps best be described as "obscure," and conclusions based on their study possess limited generality. At times the studies reported contrary conclusions, and some studies seemed to exhibit preexisting pro- or anti-Whorfian perspectives. Contentious debates frequently appeared to be the norm (see, for example, the debate between Au [1983, 1984] and Bloom [1984]). Even so, although the relationship between language and mental processes generally, and cognition in particular, is complex, collectively the studies provide broad-based support for the weak form of the linguistic relativity hypothesis.

Substantive Implications

When preparing this review, 116 empirical studies explicitly comparing the effects of two or more languages on psychological constructs were identified. These studies were reported in some five dozen articles appearing in a wide variety of behavioral journals. Of these studies, 86 percent incorporated English as a focal language, 29 percent incorporated Chinese, and 24 percent incorporated Spanish.[4] Approximately two-thirds of the studies employed college students as study participants. Many, if not most, of the studies identified appeared to be "opportunity-driven" in that they employed small convenience samples of individuals who happened to be at a location coincident to the researchers. These study characteristics suggest the need for a meta-analysis to

determine the effect of research methodology and focal language on reported findings regarding relationships between language and various psychological constructs.

Given the extant empirical research base, investigation of a wider diversity of languages is certainly a prerequisite for better understanding the effect of language on psychological constructs. For example, relatively little research has been reported on such widely spoken languages as Arabic and Hindi. Likewise, given research documenting the danger of generalizing from college student samples to nonstudent adults (e.g., Peterson, 2001), the reliance on college student samples in this research domain seems particularly unwarranted. Almost by definition, college students are more language proficient than noncollege students, and generalizing from them in this context is fraught with difficulties.

The implications of the language-cognition relationship are many and profound, not only for consumer researchers and users of consumer research, but for knowledge generation and utilization in the social sciences generally. The most general, and probably most important, implication of the present review is that regarding the search for universal consumer behavior (psychological) principles. See, for example, Dawar and Parker (1994) and Maheswaran and Shavitt (2000). Research knowledge regarding or incorporating psychological constructs based on information acquired in one language may not be fully transportable to another language. As Luna and Peracchio (2002, p. 457) have noted, "In a marketing context . . . even the perfect translation of a marketing communication may not have the same meaning as the original." Consequently, research attempting to identify "universals," at least in the realm of cognition and emotions, may be misdirected, and resources may be better spent identifying boundary conditions or contingencies that permit meaningful generalizations across languages. This chapter thus represents a call for more emic or derived etic research approaches (Berry, 1969, 1989; Pike, 1967) rather than more widespread etic approaches that often ignore the potential influence of language on consumer behavior.

Paradoxically, it could be argued that English is becoming a world language in that it is spoken in many different geographic regions and cultures and has contributed words to other languages, especially in the context of the Internet and business communication. (See Luna, Peracchio, and de Juan [2002, 2003] for illustrative research efforts focusing on Web sites.) However, as employed in international communications or spoken around the globe, English is at best the world's *second* language. As indicated in this review, a second language is by no means equivalent to a native or first language at the conceptual level (e.g., deGroot, 1992a); lexical processing differs from conceptual processing in first and second languages (e.g., Cheung and Chen, 1998), and there might be a weakness in verbal memory for a second language (Persinger, Chellew-Belanger, and Tiller, 2002). Further, brain regions activated have been shown to be different when bilinguals listen to or use their first or second language (Elston-Güttler, Gunter, and Kotz, 2005; Kim et al., 1997; Rüschemeyer et al., 2005). Therefore, commonly used scales in consumer research that have been constructed in an English-language context should be labeled "for English-speaking applications" and, if employed in non–English-speaking applications, employed with extreme caution. To the extent that the linguistic relativity hypothesis is valid, it is not realistic to speculate about common worldviews of consumers, or search for consumer behavior "principles," regardless of consumers' language or culture.

The language-cognition relationships reviewed here call into question those inferences drawn from empirical cross-cultural investigations involving different languages. As previously mentioned, the majority of the empirical, comparative studies reviewed incorporated an English-language comparison. Given the extensive use of English in consumer research studies, at a minimum inferences drawn from such studies need to be reconsidered and most likely reinterpreted in light of the language-cognition relationship. In particular, as previously noted,

inferences attributed to cultural differences may instead be due to language differences. For instance, following a four-country study, Chen, Lee, and Stevenson (1995) concluded that a relationship exists between culture and response styles. However, an alternative interpretation of their results suggests that linguistic differences, not cultural differences, may be an equally viable conclusion. Such a possibility suggests that culture and language should be treated as distinct variables whenever possible.

Attempts have been made to control for language differences when conducting cross-cultural research by using a single language. For example, in an investigation of the relationship between culture and the resolution of information incongruity, Aaker and Sengupta (2000) administered English-language questionnaires to samples of Chinese college students in Hong Kong and American college students in the United States. Given the incidence of bilingualism and the availability of monolingual speakers of each language in the two cultures, a useful extension of their research would incorporate Chinese-language treatments to assess, or at least control for, the effect of using a single language on their reported results. Considering the cognitive measures Aaker and Sengupta employed and the relationship between linguistic structure and cognition, any culturally based conclusions about information processing not taking language into account may be premature.

Hong and colleagues (2000) offered a dynamic constructivist approach for investigating culture and cognition in which they proposed that language could serve as a prime for culture-related knowledge and thus activate cultural constructs. These constructs were in turn posited to influence responses to a wide variety of psychological measures. Thus, to the extent that language serves as a priming mechanism and activates cultural constructs, it has implications regarding the process and consequences of acculturation, especially as acculturation relates to the acquisition and use of goods and services (e.g., Penaloza, 1994).

Methodological Implications

Whereas the major implication of the language structure-cognition relationship is substantive in nature, another is methodological. Research conducted in a language different from a researcher's native language, especially comparative research conducted in different cultures or countries, traditionally has employed translation techniques such as back-translation or parallel translation to convert a questionnaire from one language into another (e.g., Behling and Law, 2000; Harkness, 2003). Additionally, subsequent to data collection, various statistical analyses are sometimes undertaken to assess and hopefully establish the comparability of data derived using different languages (cf. Steenkamp and Baumgartner, 1998). The existence of the language structure-cognition relationship suggests, however, that (1) traditional translation techniques may not be able to produce data that are truly equivalent, especially at the conceptual level (see, for example, deGroot, Dannenburg, and van Hell [1994] and Temple [1997]) and (2) purely statistical attempts to assess equivalency (especially construct equivalency) may not be sufficient.

Moreover, it is common practice to allow bilingual study participants to answer questions in the language of their choice. This is especially true when surveying Hispanics (e.g., Koslow, Shamdasani, and Touchstone, 1994; Tran and Williams, 1994). It is also common practice to impose a single language on biculturals or bilinguals (e.g., English), even when priming both of their cultures in a study (e.g., Chen et al., 2005; Hong et al., 2000). To the extent that the linguistic relativity hypothesis is valid, such practices can influence answers to the survey questions due to the language used and through merely priming a language.

Evaluating the impact of culture on psychological and behavioral phenomena is one of the most

difficult research tasks (e.g., Van de Vijver and Leung, 2000). As independent variables, culture and language are completely confounded in virtually all cross-cultural investigations whenever more than one language is involved. Therefore, to disentangle their respective effects, creative research strategies are needed that simultaneously incorporate bilingual and monolingual study participants. Consider a research design focusing on two cultures, A and B, with distinct languages L_A and L_B. By incorporating samples of individuals from each culture who are respectively monolinguals (only speak L_A *or* L_B) and bilinguals (speak L_A *and* L_B), it is possible to assess the individual as well as the joint effects of language and culture on the dependent variable(s) of interest. Indeed, Ji, Zhang, and Nisbett (2004) employed such a research strategy in an attempt to separate the effects of culture and language on categorization using samples of Chinese compound and coordinate bilinguals (compound bilinguals possess a single representation for a verbal label and its translation equivalent, whereas coordinate bilinguals possess two representations, one for each language) and monolingual European-American college students. They concluded that while cultural backgrounds affect reasoning independently of language, language "may also affect thinking, depending on when and how the language is learned" (p. 65).

However, even assuming that the samples are equivalent in other nonlinguistic and noncultural regards, and that translation issues can be adequately resolved, the difficulty in teasing out the independent and joint effects of language is enormous. What is needed are comprehensive studies that incorporate language proficiency (e.g., Zhang and Schmitt, 2004), the order in which bilinguals acquire their respective languages, how they acquire their languages, and when they acquire their languages so that the separate and joint effects of the first and second language on mental processing can be empirically assessed. Ideally, studies would incorporate bilinguals who learned their second language formally in a culturally uncontaminated environment as well as bilinguals who learned their second language more informally. Likewise, studies would incorporate individuals who learned their second language at different times in their lives (e.g., early childhood versus adulthood). Ultimately, large-scale longitudinal studies will be required to disentangle the effects of language from those of culture. Although such studies would be more difficult and expensive than the traditional cross-sectional, cross-linguistic study, and may limit the topics, cultures, and languages that can be investigated, it would seem that the benefits of not having confounded language and cultural data would outweigh the costs.

Simultaneously, research should be conducted that compares the possible influence of a single language on mental processing across different cultures. That is, rather than comparing L_A in culture A to L_B in culture B, L_A (as expressed) could be investigated across cultures A–D. French spoken in France is different from French spoken in Belgium or Tunisia. English spoken in the United States is different from English spoken in New Zealand and Belize. Studying the use of a particular language across different cultures could provide additional insights into the culture-language relationship that might not be available through multilanguage, multicultural investigations.

What is obviously needed is more research, theoretical as well as empirical, on the language structure-cognition relationship. No comprehensive theory presently exists regarding the mechanism or consequences of the relationship. Such a theory is needed to integrate existing research findings and guide future research. Likewise, empirical research is needed that is simultaneously systematic, interdisciplinary, and experimentally based. Replication research is especially required, but such research must incorporate what is known about the language structure-cognition relationship. It is simply not sufficient to attempt traditional language-based *or* culture-based replications given what is now known about the interdependencies between language structure and cognition. Replications must account for both language *and* culture.

A Final Note

Finally, it is necessary to investigate whether a relationship exists between language and affect generally in the context of consumer behavior. For example, Luna and Peracchio (2005) investigated the relationship between code switching (combining words from two or more languages in a single sentence) and persuasibility for Spanish-English bilingual consumers. Their work especially has implications for individuals who speak "Tex-Mex" or entities that want to communicate with such individuals. Given the reviewed relationship(s) between cognition and emotion and the implications of the language structure-cognition relationship, it would seem logical to pursue research on possible linkages between linguistic structure and affect, especially in the realm of consumer behavior.

Research findings based on neural mechanisms offer an exciting new direction for studying the linguistic relativity hypothesis. Klein and colleagues (2001) used a positron emission tomography technique to assess how pitch perception differs as a function of linguistic relevancy. Based on data derived from Mandarin and English speakers, they concluded that "language experience may influence brain circuitry in the processing of auditory cues" (p. 646). Their results suggest that "only the tip of the linguistic relativity iceberg" has been uncovered. See also Chee and colleagues (1999) for a related procedure. The implications of linguistic relativity for understanding consumer behavior are unlimited and unexplored.

Notes

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1. In defense of Whorf, it is important to note that he wrote about a general linguistic principle. He never offered a specific hypothesis.

2. Slobin later rejected that view and found that children's speech structure was sensitive to the language they learn (see also Berman and Slobin, 1994). Slobin (1996) proposed that a type of thinking is intimately tied to language, namely, thinking for speaking or the thinking that is carried out in the process of speaking.

3. The empirical investigation reported in Berlin and Kay (1969) has been severely criticized. See, for example, Saunders and van Brakel (1997).

4. Note that the percentage of studies using English as a focal language may be due in part to limiting the review to English-language journals.

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Chapter 7

YOU OUGHT TO BE IN PICTURES

Envisioning Marketing Research

Russell W. Belk

Abstract

It used to be said that those who control accounts of past history control the future. Today it might better be said that those who control visual images control the future. And with contemporary technological advances and price declines, that can be any of us. In this chapter I outline the emerging ways in which we in marketing and consumer research can benefit from visual data and visual presentation of our findings. I also outline special problems and opportunities in conducting and using visual research. I conclude that the lure of the visual opportunities currently available make becoming visual irresistible. It is in that sense that you really ought to be in pictures.

When documentary filmmakers like Morgan Spurlock (*Supersize Me*), Michael Moore (*Bowling for Columbine*), Stephanie Black (*Life and Debt*), Alex Gibney (*Enron: The Smartest Guys in the Room*), and Mark Achbar, Jennifer Abbott, and Joel Bakan (*The Corporation*) make films about business and consumer behavior that are not only familiar to us as marketers, but are equally familiar to our students, our friends, and even our parents, we should pause to take notice that something momentous has happened. What has happened parallels developments in a variety of social sciences and humanities: consumers have become a hot topic! Fields like anthropology, history, and psychiatry that once rigorously ignored contemporary consumption as being beneath contempt, are now anxious to publish research about consumer behavior. And the heroes, fools, and villains of contemporary culture have come to be corporations, marketers, consumers, and business people. Likewise filmmakers from amateur to professional, from Hollywood studios to independent documentarians, and from Scandinavia to South Africa, are turning more and more to businesses and consumers as focal topics. Perhaps this should not be surprising. Multinational corporations have become more powerful than most nation states. The privatization mandated by world financial organizations like the World Bank, International Monetary Fund, and World Trade Organization has handed over the noblesse oblige of rulers and governments to profit-seeking enterprises. We live increasingly within a global consumer culture where being a good citizen means being a good consumer. Our lives are shaped and defined by consumption. We relate to others through consumption activities including shared entertainments, shared meals, shared gifts from the marketplace, and shared brand identities. Local communities have been supplanted by global brand communities. We judge other people as well as ourselves based largely on our consumption. And much of the image we have of how our consumption compares to others' is gained from advertising, television, films, videotapes, DVDs, photos in newspapers and magazines,

and visual images on the Internet. For we live not only in a culture of consumption but also in an economy of images.

The economy of images is sufficiently powerful that Van Ness (2005) recently asked, "Is a Cinema Studies Degree the New MBA?" At the University of Southern California, half of the 16,500 undergraduate students take at least one class in cinema/television and more than sixty academic courses there require students to produce video projects. Recently even a Baltimore street gang distributed DVDs depicting the violent death that they threatened would befall snitches. Such is the pervasive and compelling power of the visual. Whether we are consumers, managers, researchers, or teachers, those of us who ignore the visual image and think only in terms of written words and numbers do so at our peril.

Besides the rise of consumer culture and the growth of the image economy, a third development that compels us to think, research, and communicate visually is the revolution in the means of producing and disseminating visual images. Digital video technology, digital still photographic technology, and better as well as cheaper cameras, computers, camcorders, editing equipment, and storage media mean that for between a few hundred and a few thousand U.S. dollars, any of us can become a producer and distributor of broadcast-quality, even high-definition, video and still images, altered and edited into visual products that command attention. What would have cost hundreds of thousands of dollars and involved much more complex and time-consuming processes and facilities a decade ago, in order to produce television-quality videos, can now be done at our desks for a fraction of the previous cost and in a fraction of the previous time. The crew of once-needed producers, directors, camera persons, lighting technicians, sound people, editors, and other specialists needed to produce professional video have shrunk to the point where one or two people with a minimum of training can do it all.

And the image revolution is not just on the production side. On the consumption side there is a revolution of rising visual expectations from our bosses, clients, customers, coworkers, colleagues, and students. Raised not only on a proliferating explosion of television channels, videos, DVDs, and computer games, but also on an exponential growth in online audio and visual stimulation, the current generation has experienced a rapid revolution in visual sophistication (Beck and Wade, 2004; Pine and Gilmore, 1999; Poole, 2000; Sherry et al., 2000; Shrum, 2004; Wolf, 1999). As the pace of visual innovation has increased, PowerPoint slide shows have begun to look nearly as clumsy, stilted, and quaint as nickelodeons and silent film. Visual expectations, if not visual literacy (Fransecky and Debes, 1972; Messaris, 1994), have never been higher.

Thus, the culture of consumption, the image economy, the production technology, and the consumer demand for moving and still images of consumption have created an unprecedented set of conditions calling upon us to get visual. What this means for our research, teaching, and communicating is the subject of the present review. Because technology in this area is changing so rapidly, I will avoid talking about specific software, hardware, Web sites, and media, and will focus instead on the basic opportunities, threats, and consequences of becoming visual.

Visual Data Collection Opportunities

Clichés like "a picture is worth a thousand words," "the camera doesn't lie," and "seeing is believing" may not always bear careful critical scrutiny, but they suggest that visual images can sometimes do things that cannot be achieved in other ways. The free-form modern dancer Isadora Duncan was reportedly once asked what her dance meant. She replied, "If I could say it, I wouldn't have to dance it." That is, there are some things that are beyond words. Commenting on another prominent dancer with an influence on cinema, Loïe Fuller, Tom Gunning (2002, p. 75) observed:

> As we enter the twenty-first century, one of our tasks in recovering the history of cinema in the previous century . . . must be to recover the utopian penumbra cast by cinema's advent. Like the range of new media appearing today, the emergence and transformation of cinema which took place in its first two decades not only introduced new technologies and modes of representation, but inspired people to think broadly about the way the invention of motion pictures interacted with new ways of conceiving the world and new ways of making art.

Likewise it is incumbent upon us to consider how the new technologies and means of representation available to us may impact how we are able to conceive the world and represent it to others. Because of the ability of images to do unique things, they can enlighten and envision consumer and market research in several ways.

Visual Stimuli

The most obvious way that we can and do use the visual in these research contexts is as stimuli to which the consumers we are researching make some sort of response. It is almost impossible to imagine research on advertising, packaging, brand logos, store design, Web design, or product design that successfully relies on words alone. But there are other uses of visual images as stimuli in research. One such use is found in the technique of visual elicitation in conducting interviews. Here a visual representation of a person, place, object, or situation is used as the focus of an interview question that usually begins, "Tell me about." Collier (1995, pp. 245–246) explains how photographic stimuli add richness to an interview:

> Photographic interviewing is like a can-opener into complex community involvement, even before the field worker has had time to acquire a background for his own understanding. . . . The volume of information that can be gleaned by photo-interviewing is encyclopedic. . . . The knowledge suggested here is usually made much more valuable by the informant's emotional involvement with the content of the photographs. . . . You get not only facts but feelings as well.

Depending on the photographic stimuli, not only present conditions can be investigated, but also past conditions, as well as contrasts between the past and the present. Furthermore, because the research subject is focusing on these stimuli rather than staring at the interviewer, a comfortable atmosphere of story-telling is established that feels more like going through a family photo album with a family member than participating in an interview. In fact, using photo albums in visual elicitation can sometimes be a rich data collection device for understanding family, home, meals, décor, clothing, gift-giving, holiday celebrations, travel, and much more (e.g., Chalfen, 1987; Hirsch, 1981).

I have used this method successfully as part of a study of tourist photography (Belk, 2003). In a variation on this technique, Kelly Tian and I studied the meanings of the possessions in peoples' offices in a high-tech firm by first sending them disposable cameras with which to photograph the things in their office that they deemed most meaningful. After we developed the photos, they were then used as the foci for off-site interviews about workplace possessions and the extended self (Tian and Belk, 2005). When the photographic or videographic stimuli show the informant engaged in some behavior, visual elicitation with these stimuli is called autodriving, a term taken from phototherapy in psychoanalysis (Heisley and Levy, 1991). This is especially useful when stopping the behavior as it occurs would be overly disruptive and unnatural. To instead capture

images of the action for later discussion provides a more natural way to reflect on one's own behavior. For example, each party in a bargaining negotiation can later be shown a video of their interaction and asked what was really going on.

While photographic stimuli could be used in projective measures—and slightly blurred photos are in fact the basis of the thematic apperception test or TAT (Rook, 1988)—projective measures usually work better if they use more abstract cartoons, drawings, or other representations that are somewhat less associated with the "real" in a camera-cannot-lie sense of perception. When researchers George and Louise Spindler wanted to know what a group of Native Americans thought of various roles in contemporary society, they first used photographs of a nearby trading post. As Collier (1995, p. 247) explains:

> When the Spindlers used a photograph of a trading post on the reservation to see what the Indians thought of trading as a job, the responses they actually got were: "Say, you see that guy walking up to the post, he owes me twenty dollars!" or "Yes, I know that post. That trader is a real thief!" Later, when the Spindlers showed a DRAWING of a trading post, and asked questions about the role of trading, the response was, "No, I would never want to run a trading post. My relatives would eat me into bankruptcy."

Like Rorschach inkblots, the use of a more ambiguous stimulus offers more room for projection.

Some projective tests like sentence completion and word association use nonvisual stimuli. Notably, both test formats elicit only terse answers rather than rich projective elaborations. In another set of visual projective techniques, rather than giving the informant the stimulus, the informant is asked to create it. This was a part of the process in giving the informants a disposable projective camera in the workplace possession study (Tian and Belk, 2005). A similar use was made of informant-created video in a study by Sunderland, Denny, and Hunt (2003) concerning drinking by young adults and using pickup trucks by middle-aged men. Visual creation of a different sort was part of several projective tasks that informants were asked to complete in a study of consumer desire (Belk, Ger, and Askegaard, 2003). Among these tasks in that study was one in which informants were asked to create a collage of "Desire" from magazines they could cut up and paste on pasteboard. Although it was not our primary focus, we also uncovered some interesting cultural differences in comparing the sparser and more austere collages gathered from Denmark to the more lavish and colorful collages gathered from Turkey (with U.S. collages somewhere in the middle of these two extremes). All informants were also asked to sketch a design for a sculpture they had been commissioned to do to be entitled either "desire" or "not desire." In each case after completing their collage or drawings these images were then used to visually elicit further interpretations that were recorded verbatim and later transcribed. In a recent University of Utah doctoral dissertation Hillary Leonard (2005) had people do collages of their dream honeymoons and of their nightmare honeymoons. This helped to quickly reveal what is desired and feared in fantasies of honeymoons and how these fantasies differed between men and women.

In 1988, McCann Erickson Advertising was trying to develop a campaign for Black Flag's "Roach Motel," an insecticide product whose slogan was "The roaches check in, but they don't check out" (*Wall Street Journal*, 1988). They conducted research by having women, who are the primary buyers in the product category, draw pictures of roaches and tell stories about their drawings. The stories and drawings revealed that women thought of roaches as representing all the men in their lives who had ever done them wrong. What they liked about traditional roach sprays was seeing the bug surrogates for the bad men in their lives writhe in agony and die. The more sedate roach motel was not doing well because it deprived them of this sadistic pleasure. Such rich

and powerful means of visual data collection have also been systematized as part of the Zaltman metaphor elicitation technique (ZMET), together with computerized manipulation of images to construct digital collages (e.g., Zaltman and Coulter, 1995).

Visual Interviewing

Another quite common use of the visual in market and consumer research is to photograph or, more commonly, videotape interviews with individuals or groups. This can be done in a room set aside for a formal scheduled interview, including the informant's home or place of work, or in a naturalistic context where more spontaneous interviews can take place. While it might seem that the use of camcorders in the formal interview situations would inhibit informants and result in boring "talking heads" footage, the technique is often more valuable than might be imagined. Like audio recording an interview, most people forget about being videotaped after a few minutes. In some cases videotaping makes them feel more important and is flattering rather than inhibiting. There is also more value in talking heads than simply recording what is being said. Expressiveness includes nonverbal information such as gestures and expressions. In addition, an audience watching a video-recorded interview can be much more impacted than one reading the printed word or hearing an audio recording. In showing videos of talking heads (usually interspersed with contextual establishing shots, cutaways, and B-roll footage), I find that audiences may even mimic particularly memorable informants and statements. It is more than textual meanings that impact audiences even in a static interview clip. And seeing someone discussing a topic not only puts a face and personality on a comment that helps to contextualize it, it also helps to humanize the informant. In focus group interview contexts, video can help to better reveal the group dynamics. And in more specialized studies, video records can allow analysis of proxemics, choreometrics, and kinesics.

Visual Observation

Obviously, one visual application in marketing and consumer research is observing. As we know, what consumers say they do is often discrepant from what they actually do. Furthermore, there are many individual, family, and group activities that are either so taken for granted and familiar, or else so complex and multifaceted, that they defy verbal description by those involved. For example, how do you tie your shoelaces or stage a family Christmas celebration? How do people avoid bumping into each other in the supermarket or prepare for the Super Bowl? Consumer researchers have used photo- and video-aided ethnography to study such events as Burning Man (Kozinets, 1999), mountain men (Belk and Costa, 2001), Christmas in Japan (Kimura and Belk, 2005), and buying and selling souvenirs at Ground Zero in the aftermath of the destruction of the World Trade Center Twin Towers (Marcoux and Legoux, 2005). Consumer research has a relatively long history of videographic research going back to the consumer behavior odyssey—a breakaway project in which a team of nearly two dozen academic and corporate researchers traversed the United States from Los Angeles to Boston during the summer of 1986. One of the key outputs from this project was a video entitled *Deep Meaning in Possessions* (Wallendorf and Belk, 1987).

One type of primarily observational marketing research that has become popular in the past decade is known as *coolhunting*. The method involves sending out young researchers with cameras or camcorders to detect the latest cool fashions, music, grooming, dance, and other aspects of cool consumer culture (Goodman, 2003; Lopiano-Misdom and De Luca, 1998). As Pountain and Robins (2000) observe, coolhunting has created a whole new profession, one that has now

emerged in fiction as well (e.g., Gibson, 2003; Shakar, 2001). According to Quart (2003), many "teen consultants" are willing to work at no cost in reporting on emerging brand trends. But because discovering cool and subsequently mass marketing it kills its in-group coolness, this form of research has its limitations. Goodman (2003) suggests that brands like Sprite and MTV have been more successful in facilitating the creation of cool rather than merely copying it. Holt (2004) maintains that only by being attentive to changing cultural values and meanings can popular brand icons be created.

One further form of visual observation that should be noted is the use of archives of visual images in order to do historical consumer research. Visual images in the form of petroglyphs, petrographs, and three dimensional cave art predate the written word. Along with physical artifacts (also visual in a broader sense), these and more recent materials offer intriguing repositories of cultural meaning that can be used in analyzing the otherwise inaccessible, and often long dead, makers of these images. For example, Xin Zhao and I used 1920s Shanghai calendar ads to examine aspects of globalization in pre-Communist China (Belk and Zhao, 2003). Güliz Ger and I examined art from late Ming China and Golden Age Netherlands (both circa seventeenth century) in order to understand how the consumer cultures that were emerging simultaneously in these diverse parts of the world converged and diverged depending on the cultures involved (Ger and Belk, 2005). And in his University of Utah Ph.D. dissertation, Xin Zhao conducted a semiotic analysis of "adeology" in ads appearing in the *People's Daily* in the two decades of China's embrace of capitalism since 1979. He found that by clever borrowing of images from communist propaganda, advertising was able to subvert the power of communism and replace it with a consumerist ideology.

As the last application suggests, archival visual images can also be used to analyze and critique prior representations. For example, Lutz and Collins (1993) deconstruct the neocolonialism and racism of *National Geographic* magazine's representations of "the other" in its images of the non-Western world. Mamiya (1992) analyzes how pop art reflected and stimulated American consumer culture. Schroeder (2002) provides an analysis of how bank Internet sites inspire confidence through visual but virtual representations of classical architecture. Hall (1997) shows how advertising and other media commoditize and caricature race and gender to reinforce the dominant power structure. And Adrian (2003) analyzes elaborate Taiwanese wedding photos in order to probe globalizing notions of beauty. These are only a few of many available examples. As consumer production of visual images proliferates, we can draw on an increased repertoire of media and material for such analysis. Dennis Rook (1985) pointed the way for such projects in his collection of family home movies made during Christmas celebrations. The analysis of visual rhetoric is something that Linda Scott has advocated for some time (see Kenney and Scott [2003] for a summary). Because most of marketing and consumer research has privileged the printed word, the unquestioned visual has largely escaped us, even though it may have far greater power of persuasion and image making (Messaris, 1997; Scott and Batra, 2003; Shrum, 2004).

I will not go into the practical considerations of making and analyzing visual images here, but there are a number of good guides available (e.g, Banks, 2001; Barbash and Taylor, 1997; Bauer and Gaskell, 2000; Pink, 2001; Rabiger, 2004; Schirato and Webb, 2004; Wright, 1999). In addition, together with Rob Kozinets and professional filmmaker Mel Halbach, I have co-led two consumer videography workshops at the University of Utah and have led others in Hong Kong, Australia, and Sweden. Commercial training services also provide video workshops, albeit not focusing specifically on consumer and marketing research. I will also not discuss more theoretical issues of what visual marketing and consumer research should attempt to accomplish. These are discussed to some degree in Belk and Kozinets (2005a, 2005b) and Kozinets and Belk (forthcoming). But to a large degree, these are questions that can only be answered in practice. Good visual research in

consumption is what good visual researchers do and successfully bring to the attention of others. By analogy, imagine contemplating the future of photography soon after its invention and trying to answer the question: What is it good for? We are still creating answers to this question today, and it seems likely that we are nowhere near the end of our creativity in inventing new uses for the photograph. So it is for visual images more generally.

Visual Presentation Opportunities

Collecting and analyzing visual data are only parts of the brave new world of visual possibilities in consumer and marketing research. The same ongoing digital revolution that has made it possible to gather visual data easily and inexpensively has also made it possible to distribute visual data more easily and inexpensively than ever before. Coupled with an explosion of interest in and venues for visual work in consumer research, it appears that we are entering a Golden Age of visual and multimedia marketing research. Furthermore, some of these new opportunities make it possible not only to present visual data but to present it to new audiences, in new ways, with greater audience participation than ever before. I will discuss these possibilities only briefly here because I have elaborated and exemplified them elsewhere (Belk, 1998).

Local Access Visual Presentation Media

By local access, I mean that the audience must be in close physical proximity to the vehicle containing the images. Examples include books, films, videotapes, CD-ROMs, DVDs, printed photographs, and slides or slide-show presentations. The fact that these are local access media does not mean that they can be viewed only by a single individual at a time. Nor does it mean that most of these cannot be converted for some form of distributed access presentation. But in their original formats, it is necessary to access these media in the place where the vehicle is located—normally a bookshelf, library, theater, film festival, or planned presentation. For at least some of these, like books, magazines, CDs, and DVDs, the advantage is that they can be owned or borrowed and viewed or shown whenever and as often as desired. Besides the necessity for ownership or access, another corresponding disadvantage is the limited audience size with local access media due to their being presented at a fixed time and place. But there are some less obvious aspects of these media that should also be recognized.

Books and journal articles containing visual images are relatively permanent archives and can be supplemented with captions and text. Although publishers may resist including a large number of photographs or including color reproductions, possibilities exist for including visual images that move, talk, sing, and show special effects by including a CD-ROM or DVD with the book or journal. This is what occurred in the September 2005 issue of *Consumption, Markets and Culture* for which Rob Kozinets and I were guest editors. The included pair of DVDs contains eight projects, six of which are videos, one of which is a photographic essay with titles and music, and one of which is an aural presentation with slides. Partly because the publisher was committed to printing a certain number of pages each year, these eight visual or aural projects were accompanied by articles as well, which were used in different ways by different authors. These uses included presenting further analysis, interview transcripts, elaboration of the visual arguments, literature reviews, contextualization, and theorization.

With DVDs and CD-ROMs, additional interactive features are possible that go beyond linear presentations of video or photo material in a fixed sequence and at a fixed pace. An example of what can be done on a simple CD-ROM is Peter Menzel's (1994) *Material World*. The CD allows

the user to "visit" families in each of thirty countries and to see all of their possessions along with their stories about the meanings of these items. At the user's option an annotated photo/video album of the family can be perused, a questionnaire completed by the family can be examined, notes by the photographer can be read, and descriptions of the country and the family's life there can be consulted. The user can also choose to view and compare specific consumption patterns across countries, like bathrooms, kitchens, music, schools, transportation, and pets. These can be examined through visual images, charts, or tables of numbers. There are more options available, but these uses give some idea of the interactive possibilities.

From this example it is easy to envision how researchers might present their work in ways that allow the user to decide the order, depth, and features of a data set and analysis that they would like to access. For example, the viewer of an interactive CD or DVD could decide to see and hear instances that support a particular conceptual scheme in a research project. Or they could decide to search and explore new themes that have been coded into the observational and interview data present on the disc. They could compare the views of men and women, rich and poor, or members of different ethnic groups. If they wished, users could see and hear more of an interview with a particular informant, make comparisons across all informants on a particular topic or theme, see additional still photos of an event, hear additional commentary by the researcher, and much more. Of course, first, the CD or DVD needs to be created in a way that allows such interactive viewing, but there are many good programs for authoring such presentations. And most computers now allow the researchers to burn CDs and DVDs. For larger production runs, services are available that reproduce, print designs, and package discs for less than US$1 each.

Ethnographic and documentary films, videos, and DVDs can also be entered in film festival competitions such as the Association for Consumer Research Film Festival, the Margaret Mead Film Festival, the Telluride Documentary Film Festival, the Sundance Film Festival's documentary track, and many others. The year 2005 marked the fourth North American Association for Consumer Research (ACR) Film Festival and included films from Africa, Asia, Europe, Latin America, and North America. In 2005 ACR also held the first European ACR Film Festival in Sweden. In 2006 the first Latin American ACR Film Festival will be held in Mexico and the first Asia-Pacific ACR Film Festival will take place in Australia. The additional advantage of film festival showings over only producing and self-distributing videos is that the jurying process involves a peer review that is equivalent to the editorial reviews of journals and that acts as a screening mechanism to assure that only the highest quality videos are included. For a discussion of what high quality means, see Kozinets and Belk (forthcoming).

Local access visual presentation media also include showing slides and videos in the classroom and boardroom. In addition to being smaller than VHS tapes and easier to carry around, CD-ROMs and DVDs also allow random access to the material they contain so that it is not necessary to wind and rewind videotapes that are cued up to one desired point. Academics have done this for years, and most textbooks in marketing and consumer behavior include supplemental video packages. A number of the films from the ACR Film Festivals have become a part of such packages. Commercial marketing research has also increasingly turned to producing videos in order to meet client demands and take advantage of more accessible and inexpensive video and editing technologies. The classroom has also benefited in another way. For the past six years I have given students the option of producing a ten-minute video instead of a written term paper in my classes. I have accumulated enough camcorders, microphones, tripods, and editing equipment, so that a class of thirty students can all focus on making videos in small groups of two or three students. Increasingly, I find that students have their own equipment as well. Although they end up spending more time than they would on a written paper, they get much more highly involved and report learning a great

deal in the process. They have also been accustomed to seeing video in the classroom, since I use at least some video during each class. And as Van Ness (2005) concludes, these business students may well be gaining essential visual skills for corporate success.

Distributed Access Visual Presentation Media

Distributed access means that many people can have access to a visual presentation without being at the same place at the same time and without acquiring a physical copy of the physical vehicle (e.g., tape, CD, DVD) that contains the material. Primary examples are television broadcasts, downloading or watching images on the Internet, and accessing and participating in interactive Web sites. There are a number of variations possible with each of these. For example, material for downloading could be made available through an individual's personal Web site (e.g., Jensen Schau and Gilly, 2003) or through a journal Web site, for example, the streaming video available with the article by Kozinets (2002) on the University of Chicago's Web site for the *Journal of Consumer Research* (*JCR*). Just as film festivals offer a juried filter that private distribution does not, journal sites employ a review process that provides a peer review screening and that should fare better with university promotion and tenure committees. Besides *JCR*, the online *Academy of Marketing Science Review* has begun to include video on their Web site and other journals are planning to move in this direction. The *Journal of Consumer Research* has also begun to post high resolution color photos on its Web site in order to supplement lower resolution black and white photos in the printed version of the journal (e.g., Belk, Ger, and Askegaard, 2003).

With both online and television broadcast distribution, another potential advantage is the ability to reach a far broader audience than is possible with local access media. While television broadcasts may be national, Internet access is potentially global. And search engines are likely to bring a broad audience to Web sites with open access. I have had people in Asia tell me that they recognized a village chief from Fiji shown on my Web site. And on our first day of fieldwork in a remote Aboriginal village in Australia, informants told Ronald Groves and me that they had just seen us that day on television. It happened that a video we had provided for one of the Australian networks had aired that very day. This coincidence gave us added credibility and ease of access to members of the community whom we were (visually) studying.

As with interactive DVDs and CD-ROMs it is easy to allow Internet audiences to direct themselves through the links on a Web site in whatever combination and sequence the person chooses. Also, within a community of scholars with their own Web sites, each may imbed links to the others. In the case of streaming or downloadable video there may be less interactive flexibility, but here too, by breaking the video into chapters or segments, a fair amount of audience direction is possible. And as with DVDs, options for different languages may be provided if the creator of the Web-based material has built in multiple sound tracks and/or subtitles. With the current popularity of blogs (Web logs), vlogs (video logs), and pod-casting (audio and/or video), we may see a partial glimpse of a future that promises to provide even more ways to access visual material via the Internet, cellular phones, e-mail, and future technologies.

Special Issues with Visual Research

In contrast to the unproblematic portrait of visual research presented above, Susan Sontag (1977, pp. 13–14) considers the camera an aggressive weapon that penetrates into the lives of those photographed:

> The camera as phallus is, at most, a flimsy variant of the inescapable metaphor that everyone unselfconsciously employs. However hazy our awareness of this fantasy, it is named without subtlety whenever we talk about "loading" and "aiming a camera, about "shooting" a film. . . . [And in anticipation of digital cameras and camcorders] the modern camera is trying to be a ray gun.

The camera as gun metaphor also suggests that the consumer researcher with the camera or camcorder as weapon is stalking big consumer game in order to capture trophy images of the prey and preserve them for our voyeuristic scrutiny. One implication of such an imbalanced power relationship between the maker (or taker) of images and the subject is that special care is needed to understand that the subject knows the uses to which these images will be put and agrees. In addition, in making images for distribution to a broader audience than the research team, normal research guarantees of anonymity become impossible. Furthermore, simply signing an informed consent form before an image-making session may not be enough. When doing videographic research, I have participants sign two separate consent forms: one at the beginning of a data collection session and one after it is completed. The first permission request allows only the data collection (i.e., the interview and/or observation) and its visual and audio recording. The second form asks the participant which of various listed uses he or she will allow. These typically include: none, use by the research team only, presentation to students and professional colleagues, and unrestricted including television broadcast or Internet use. In this way, the informant is not signing a blank check, but at least knows what data have been collected and hopefully understands the uses to which they may be put. At least this is the hope. In less affluent cultures and groups, many of these uses may be quite unfamiliar. Thus, there are special ethical considerations that arise in visual research to which the researcher must be alert.

There are also unresolved issues in visual research as to what we should expect of such research in comparison to more familiar text-based and/or number-based research. Because images seem to present or represent "reality," and because they seem closer and more faithful to the event photographed or videotaped, there are advantages as well as disadvantages in terms of audience reactions. To the extent that the audience is credulous and passive (both more likely with noninteractive linear presentation formats), there may be a relative lack of critical scrutiny of visual material. It may seem indisputable and factual, so that the audience fails to question how the material was obtained, how it was edited, what was left out, and how it is presented in light of the many options that the editor has in decisions such as colors, angles, transitions, music, titles, narration, and so forth. One way in which the image maker can disrupt such unquestioning and passive reception is to provoke the audience into a more active response by, for instance, presenting multiple conflicting points of view, making the presentation interactive, or using the images to ask questions more than to attempt to answer them. This is the approach taken by pedagogical visual case studies, for example.

On the other hand, because visual images seem so close to the events and people they represent, it may be harder for both the presenter and the audience to see the opportunity for theoretical rather than merely descriptive contributions to understanding. This is not to say that photo and video research should avoid description and aim only for theoretical contribution. These media are too rich in potential to try to narrow the creative ways in which they might be used. Some of the more popular documentary films cited at the beginning of this article are successful because they advocate a particular point of view and challenge audience assumptions. They make little pretense to being theory-building attempts. The variety of purposes that visual presentations may serve means that they can also be targeted to different audiences so that a project aimed at academic researchers, academic teachers, managers, public policy officials, or general consumer audiences may take a different approach accordingly. But the issue is one of audience assumptions and expectations. The photographer or videographer needs to keep in mind

the audience's likely assumptions of facticity much more than is typically the case with purely textual presentations where more critical reception may be assumed. The precise way in which this problem should be addressed has no one singular prescription.

Conclusions

The visual revolution taking place in consumer and marketing research has been growing and gaining momentum for nearly twenty years now. Although the visual has been used in experiments, surveys, and some measurement instruments, its primary uses have been in qualitative and interpretive research, which have also been growing throughout this period. High quality video, according to criteria proposed by Kozinets and Belk (forthcoming) shows a combination of topicality, theatricality, theoretical quality, and technical quality. Different films with different objectives may emphasize a differing combination of these elements. Although all video should strive for high technical quality production values, a descriptive research project may emphasize topicality, an academic research project may emphasize theoretical quality, and a film intended for a broad audience may place special emphasis on theatricality. Given the differing emphases of these criteria in different possible projects, varying combinations of technical, artistic, analytical, and theoretical skills are required.

It is quite possible to learn new skills involved in capturing, editing, and distributing visual consumer and marketing research. It is also quite possible to team with others who already possess some of these skills. But either way, we need to envision the world of consumption. Doing so will result in better research and better teaching. It will allow us to reach broader audiences more effectively. It will allow these audiences to more selectively access the information they find most interesting. And it will add depth, dimension, and humanity to our research and our communication of this research to others.

In his otherwise interesting book on cultural branding, Holt (2004) shows no images of products, logos, ads, stores, people, packages, or other visual imagery. Even the occasional verbal mentions of these visual elements of brands are given short shrift in an almost entirely textual, verbal, story-driven account of how certain brands become icons. This is all the more ironic because the success of many of the iconic brands cited, including Coca-Cola, Volkswagen, Apple, and Nike, is difficult or impossible to imagine without their respectively distinctive bottle, shape, logo, and athletes, all of which provide visual images around which brand myths cohere (Pavitt, 2000). Just as the cross of Christianity, the Eiffel Tower of Paris, the Union Jack of Great Britain, and the lips and tongue of the Rolling Stones instantly conjure a richly emotional set of largely ineffable meanings, so do these visual elements of the iconic brand become the icon and all that it represents. What is Disneyland without Mickey Mouse and his stylized ears? What is McDonald's without its golden arches? What is Mercedes without its star? Reduced to stories and words, each is far more difficult to articulate and explicate. Such is the power of the visual. We ignore it at our peril.

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