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Managers' market beliefs: Nature and effects on information use in competitive pricing decision-making

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The Ohio State University, 1993
MANAGERS' MARKET BELIEFS: NATURE AND EFFECTS ON INFORMATION USE IN COMPETITIVE PRICING DECISION-MAKING

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

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* * * * *

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To My Parents
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CHAPTER I
INTRODUCTION

DESCRIPTIVE THEORY IN MANAGERIAL DECISION-MAKING

Information Utilization

Despite uncertain competitive environments, differences in seller knowledge and in information use are yet to be fully appreciated as a source of competitive advantage (Glazer 1989). There is little broad-based conceptual and empirical understanding of the role of these variables in actual managerial decision processes. Increasingly, however, there is a heightened awareness of the need to develop descriptive and explanatory theories of managerial decision-making (e.g., Day and Wensley 1983; Weitz 1985). To this end, it is essential to obtain a better understanding of the acquisition, valuation and use of information, because it is an integral part of organizational decision theory (Pfeffer and Salancik 1978; Gersick and Hackman 1990; Walsh 1990).

Since marketing models of pricing have been dominated by the standard microeconomic framework, they typically assume that the decision-maker (the "firm") has perfect information (see Lilien and Kotler 1983) leading to optimal
equilibrium prices. This is a limiting assumption. The empirical evidence on patterns of information collection and use in organizations indicates that managers make decisions with less than perfect information. For instance, Feldman and March (1981) document information inefficiencies in the organization: frequent instances of information collection after the decision has been made, use of information for other-than-intended purposes, routine collection of irrelevant information and requests for ever-increasing amounts of information.

Moreover, despite important theoretical advances in modeling imperfect information in economics (e.g., Milgrom and Roberts 1986) and marketing (e.g., Winer 1988), the problem of imperfect information is still widely regarded as one of availability, rather than of use. In many situations, availability is, no doubt a problem: the decision-maker may not have adequate information because it does not exist or is not communicated in usable fashion. Similarly, information routing through individuals who have different criteria and priorities may compound perceptual and interpretative biases at each stage, affecting the ultimate availability of accurate information (Pfeffer and Salancik 1978). Nevertheless, the tremendous increases in information availability over the last couple of decades, together with the findings on information utilization (e.g., Deshpande and Zaltman 1982), necessitate the recognition that information utilization cannot automatically be assumed to follow availability.

There is now a formal recognition of the need for research on information utilization in managerial decision-making in marketing and other
business disciplines. This is reflected by the inclusion of this topic on the Marketing Science Institute's list of research priorities for 1990-1992. This list is composed of issues identified as "timely" and "important:" "if firms' decisions are to improve ... the research information must be used by decision-makers" (MSI 1990, p.5; see also MSI 1989).

Sociological studies of information use have also shifted their emphasis from a narrow consideration of information characteristics (e.g., its actual quality or cost) to the examination of the abilities and values of information users (Zaltman 1979; Larsen 1982). Feldman and March (1981) suggest that many factors affect information use: (i) managers may be unable to process information (ii) they may obtain the wrong kinds of information (iii) information collection in the firm may be purely pro forma (iv) the firm may provide incentives for gathering more information than is optimal, especially if it is believed that greater information collection signals more 'intelligent' decision-making and (v) managers may not recognize routine 'surveillance' information as being important. In addition, information may be used less if managers' risk preferences and limited time-frame for decisions cause them to rely more on 'industry wisdom' or intuition (Hoch 1988).

**Market Beliefs**

The dissertation research attempts to delineate premises for descriptive and explanatory models of the _managerial_ (rather than of an anonymous 'firm') decision process, with a specific focus on pricing decisions. It formally
investigates the issue of information use through a focus on how informed the manager is in decision-making. This perspective recognizes that decision-maker "informedness" should be attributed to externally-available market information as well as prior internal knowledge about the market ("market beliefs"). Beliefs reflect subjective knowledge which competes with formal, analytic knowledge. Such beliefs can affect decisions directly through an almost instinctive choice of decision heuristics (Sherman and Corty 1984) and indirectly, through effects on information evaluation and use. The research further examines whether systematic biases occur in the use of market information such that information which contradicts managers' prior market beliefs is used less than belief-consistent information in decision-making (cf. Lee, Acito and Day 1987).

The study of market beliefs helps broaden the theoretical base of marketing models by integrating behavioral research on human judgment, social interaction and social cognition (cf. Weitz 1985). Such an approach is overdue in developing descriptive pricing models in marketing. This is partly because the standard economic model has long been defended as a satisfactory predictor (e.g., Friedman 1953) and as a satisfactory approximation (e.g., Coase 1957) of market behavior. The optimality of managerial decisions in the normative formulation has also been applied to descriptive ends, leading to inferences about market parameters from the observed decision; for example, Nagle and Novak (1988) characterize the nature of market price sensitivity from an observation of prices and markups across various stores in a market. While this may be justified in many instances, it
precludes a better understanding of the actual decision process. The dissertation's direct focus on these issues is important and interesting in light of empirical research questioning the "fit" of managers' market beliefs (and the resulting decisions) with the actual market environment (cf. Preston 1963; Urbany, Dickson and Key 1990).

There is considerable research in organizational behavior attesting to the importance of managerial cognition in decision-making (e.g., Zaltman 1979; Walsh 1990). Such research is useful in indicating factors which may determine the role and effects of market beliefs in decision-making. For instance, through training and rituals (Ashforth and Fried 1988) belief-structures become highly standardized and institutionalized in organizations. They may then affect the manner in which the information environment in the firm is structured, and consequently, determines the data, methods or other knowledge components that are made available to decision-makers (Pfeffer and Salancik 1978; Walsh 1988b; Gersick and Hackman 1990). Similarly, selective information biases may occur due to functional affiliations (e.g., Dearborn and Simon 1958). Finally, conceptual developments by Holzner and Fisher (1979) and Ashforth and Fried (1988) suggest that belief-based decision-heuristics are likely to be applied 'automatically' in routine decisions characterized by low procedural uncertainty and standard operating procedures.

The focus on information utilization in decision-making is especially important in light of the stream of research indicating the occurrence of selective information use, namely that belief-discrepant information is often discounted, and
ignored in judgment and decision-making (e.g., Crocker 1981; Alloy and Tabachnik 1984; Pyszczynski, Greenberg and Holt 1985). The evaluation of information is biased by whether individuals want to believe its conclusions (Nisbett and Ross 1980).

Psychological theories of cognitive influences on information use have been integrated into previous research in marketing primarily in studies of consumer behavior (Duncan 1990). For instance, Duncan and Olshavsky (1982) found that the "market beliefs" of consumers (e.g., the relationship between perceived quality and variables such as price and country-of-origin) accounted for as much as 50% of the variance in their predecision information search. There is some indirect evidence in marketing studies of managers as well. For instance, a survey by Deshpande and Zaltman (1982) found that marketing managers reported that they would use market research information less if it were "surprising" (also Lee, Acito and Day 1987).

These studies suggest that external information may be ignored if it is inconsistent with a confidently-held belief. In the context of pricing decisions, this implies that managers may fail to use available market information if it is discrepant from prior market beliefs or implies a need to reconsider frequently-applied pricing decision heuristics. The resulting pricing decisions may be based on outdated (albeit confidently-held) market beliefs and may not be optimal, or for that matter, even satisfactory.
RESEARCH ISSUES

The dissertation focuses on understanding managers' beliefs about the market and experimentally investigating the effects of such beliefs on (information utilization in) routine pricing decisions in an imperfectly competitive market, namely, the retail grocery industry. Particular emphasis is placed on examining managers' use of belief-consistent versus belief-discrepant market information. Thus, the key research issues are the following:

1. What are relevant market beliefs for pricing decisions in imperfectly-competitive markets?

2. What is the nature of these market beliefs? How well do they correspond with the actual market environment?

3. To what extent are routine pricing decisions based on prior market beliefs (as reflected in the exclusive reliance on standard pricing heuristics) versus current market research information?

4. Do market beliefs lead to selective utilization of market information in pricing decision-making?

The study of these issues involves a program of research aimed at developing understanding of pricing decision-processes with particular emphasis research on the role of managerial cognition and information use. It extends the study of market beliefs (cf. Duncan and Olshavsky 1982) into the managerial setting, namely, the retail grocery industry. The first empirical study of the dissertation comprises an exploratory study, to examine whether managers in a regional grocery market subscribe to various market beliefs identified from normative information economic theory, and to assess the fit of managers' beliefs with the market
environment. This is followed by an experimental study of a nationwide sample of supermarket pricing executives which investigates the role of beliefs in decision-making. It examines the application of a common belief-based pricing heuristic and corresponding effects on the evaluation and use of (belief-discrepant) information in routine pricing decisions.

This research program makes a contribution beyond the extant research in strategic management and organizational behavior (see Walsh 1990 for a review) and in marketing (Lee et al. 1987). By identifying relevant beliefs and linking them to observed decision-practices in a specific market decision-setting, the research addresses the first two of the three major issues identified as critical research areas for applied management researchers (Walsh 1990, p. 7): (a) to uncover the content of particular knowledge structures (b) to relate the reliance on beliefs to consequences of substantive importance (c) to uncover origins of belief-structures. Further, the dissertation studies increments the empirical evidence on information utilization in actual decision-making: "the volume of theory development far outstrips empirical hypothesis-testing in this area" (Walsh 1990, p. 13). The research is timely and important because it facilitates the understanding of the decision-process and suggests premises based on an interdisciplinary approach, that are more appropriate for the development of descriptive / explanatory pricing models than those based on pure economic models.
STRUCTURE OF THE DISSERTATION

The remainder of the dissertation is organized as follows. Chapter II presents economic theories of price determination with special consideration of their assumptions about the knowledge and 'informedness' of managers. This is followed by an extensive review of the research in psychology and organizational behavior on the role of managerial beliefs and information utilization. The proposed model of market beliefs and information use and corresponding hypotheses are also presented (Chapter III). Chapter IV describes the exploratory study of managers' market beliefs in one retail grocery market. The methodology and research setting for the experimental study of the proposed model of information use are described in Chapter V. Chapter VI describes the pretest and Chapter VII, the main study. Chapter VIII discusses the major findings of the overall research program, its implications for managerial decision-making and issues for future research.
CHAPTER II

CHARACTERIZATION OF DECISION-MAKER INFORMEDNESS:
THEORETICAL ISSUES AND EMPIRICAL EVIDENCE

INTRODUCTION

The development of models of price determination in marketing literature has been dominated by the microeconomic paradigm. Neoclassical economic theory is largely normative, devoted to examining the interplay of market forces in determining equilibrium, given various assumptions about the market. Such models typically characterize the pricing decision-maker (the "firm") as having perfect information about the market. The relaxation of this assumption has resulted in a stream of research known as the Economics of Information which examines price determination under conditions of asymmetric information\(^1\), i.e., the differential uncertainty of economic agents about other participants in the market.

The dissertation attempts to understand the nature of the knowledge that managers have about their market in making actual pricing decisions, as a

\(^1\) This is in contrast to the 'economics of uncertainty' which considers information imperfections to be equal across all market participants (Phlips 1988).
necessary first step to the development of explanatory pricing theory in imperfectly competitive markets. Therefore, this chapter examines the manner in which firm (seller) and consumer (buyer) information have been characterized in standard frameworks of price determination. The key economic models of pricing are reviewed; the objective is not to provide an in-depth review of these models but rather to understand their characterization of price-setting, with particular emphasis on assumptions about decision-maker informedness. The models of competition under perfect and imperfect information are reviewed first, followed by models of consumer price search. Since the research-setting for the dissertation is the retail grocery industry, the final section of this chapter examines key empirical studies of pricing in this industry. The consideration of how the adoption of a multi-disciplinary approach can modify the normative theoretical characterization (e.g., Monroe and Mazumdar 1988) is discussed in the next chapter.

MODELS OF OLIGOPOLISTIC COMPETITION: PERFECT INFORMATION

Industry Structure

Price and quantity decisions in economic models of the firm are based on production costs and on demand conditions facing the firm, given its pricing goal (usually assumed to be profit maximization). Models of competition assume that demand conditions in the market are given, and derive equilibrium prices based on firm and industry characteristics.
The competitive structure of the industry influences the demand curve faced by an individual firm in the industry. At one extreme of the spectrum of market structures is the perfectly-competitive market in which, owing to the large number of firms and a homogeneous product, no single firm can determine the price (see Browning and Browning 1989). At the other is the sole monopolist which sets price based on the equation of marginal cost and marginal revenue. Most actual market structures fall into the intermediate category of imperfect competition comprising monopolistic competition and oligopoly. In the former case, although there is a large number of firms, each firm faces a downward-sloping demand curve because of product differentiation. The pricing decision of any one firm is not affected by the price charged by others. In an oligopoly on the other hand, there are a few firms with a differentiated or homogeneous product. The fundamental characteristic of an oligopoly is the mutual interdependence of firms with respect to price and output determination. As a result, the demand curve faced by each firm is indeterminate. Since the present focus is on markets in which each firm is keenly aware of and responsive to the other's actions, only theories of oligopoly are reviewed.

Neoclassical Oligopoly Models

The interdependence between rivals' price decisions in an oligopolistic market was initially modeled in classical "reaction function" models in which each firm makes conjectures about the likely reactions of others (see Kreps 1990). For
instance in the Cournot model, the firm's reaction function reflects the assumption that competitors will not respond to its decision by changing their quantity decisions, while in the Bertrand model, the competitor's price is assumed to remain unchanged. The von Stackelberg formulation proposes a sequential and reactive solution: a "leader" sets quantity, after which the remaining firms make their decisions. The "kinked demand" curve theory (Sweezy 1939) attempted to explain the observed price-rigidity in many mature oligopolistic markets. In this formulation the firm assumes a specific reaction pattern to any price-change it initiates, namely that competitors will follow price-cuts quickly (thereby negating any competitive advantage) but not price increases. The resulting kinked demand curve and the corresponding discontinuity in the marginal revenue curve implies "sticky" prices, since over the range of the discontinuity, prices will be unresponsive to moderate changes in demand or cost.

Another class of models examine collusion between firms in setting price and output. These include entry limit pricing models which describe cooperation between existing firms which set market prices so low as to deter potential entrants (see Browning and Browning 1989 for a review). Other researchers have proposed less deterministic formulations in which firms attempt to reduce competitive uncertainty over time. For example, in the Cyert and Degroot (1973) model, firms gradually disseminate information such that competitive interaction begun non-cooperatively moves toward a more cooperative mode without explicit collusion. Collusive models are beyond the scope of the present research.
Neoclassical oligopoly models make behavioral assumptions about competitor response to a firm's actions, derive the profit maximization conditions under these assumptions and thereby describe equilibrium. In all of these models, equilibrium price lies between the competitive price and the short-run monopoly price; as the number of firms increases, the price will approach the competitive level.

There has been much research addressing the drawbacks of these formulations. For example, various empirical studies have failed to support the kinked demand formulation (Stigler 1947; Primeaux and Bomball 1974). It has been pointed out that the ability of classical models, in general, to derive definite equilibrium predictions is based on ad hoc assumptions about rivals' conjectures (Milgrom and Roberts 1986; Kreps 1990). The implied price-setting process in all of these models presumes that firms have perfect information about consumers. For example, the asymmetric competitive response-pattern to price increases and decreases in the kinked demand formulation attributes to the manager not only knowledge about market prices, but also about buyers' awareness of price-levels and responsiveness to price differentials.

---

2 Blinder's (1991) empirical examination of various theories of oligopoly in a broad cross-section of industries finds that among the primary reasons offered by managers as explanations for price-rigidity are reliance on cost-based pricing and a hesitancy to initiate price increases.
Game Theory

Game theory applies mathematical techniques to model the interdependence among rival firms and to consider the role of uncertainty in decision-making more explicitly (von Neumann and Morgenstern 1944). Since oligopoly markets are, by definition, characterized by a fundamental interdependence among firms together with their awareness of this interdependence, oligopolistic decision-making is a natural domain for the application of game-theory.

The basic structure of a game-theoretic model (defined in terms of the "rules of the game") reveals its characterization of strategic independence: it specifies the set of agents ("players"), the alternative actions and the information available to any player at any one of its "moves." It becomes a game when a set of outcomes is associated with each sequence of alternatives chosen by the players at their moves, and a set of utility payoffs with each outcome (Schotter and Schwodiauer 1980). In the fundamental noncooperative Nash solution, each firm's strategy is its best response to that of the other competitors: no player can unilaterally increase its profits by changing its strategy given the strategies of all the other players. Since each competitor is assumed to respond in a similarly rational way, firm behavior is determined by the set of actions that maximizes expected utility. "Extensive form" games describe dynamic sequential interaction

---

3 Schotter and Schwodiauer (1980) provide a comprehensive review of the basic models of noncooperative game theory. Other reviews include Philips (1988) and Kreps (1990). Moorthy (1985) discusses its application to marketing models of competition.
while normal/strategic form games examine only the actions or strategic information available to the players and the payoffs associated with such strategies.

It must be noted that classical models of game theory still assume complete information. All players know that the rules of the game, including the utility functions of all other firms. Schotter and Schwodiauer (1980) conclude that these models do little more than generalize the results obtained already by Cournot and other models. For instance, the Stackelberg leadership solution is equivalent to the noncooperative equilibrium of an oligopoly game in extensive form in which the followers have perfect information about the leaders' choices and do not have the power to collude.

MODELS OF OLIGOPOLISTIC COMPETITION: IMPERFECT INFORMATION

Economics of Imperfect Information

Asymmetric information models address market uncertainty: economic agents (sellers or buyers) are unsure about the supply-demand offers of other economic agents. Asymmetric information structures assume either that one side of the market is completely informed while incomplete information prevails on the other, or that some agents have information that others on the same side of the market do not have (Phlips 1988). The following sections describe (i) models in which the information asymmetry is between firms, given consumer demand and (ii) search models in which firms have complete information but the buyers' information varies.
Models which recognize the existence of information asymmetries in the market involve the consideration of strategic interplay and are, therefore, relevant to the study of imperfect competition (Phillips 1988). Many marketing researchers have also suggested that models of asymmetric information models can be fruitfully applied in the development of descriptive models of competitive interplay, dynamic competition and price wars (Rao 1984; Eliashberg and Chatterjee 1985). Moreover, equilibria in such models need not correspond to those derived under the assumption of perfect information (Milgrom and Roberts 1986), and therefore, are deemed potentially valuable for descriptive formulations:

"Recognition of information asymmetries and the strategic possibilities they engender can yield models that begin to capture the richness of behavior that marks the real world" (Milgrom and Roberts 1986, p. 185).

The following review, however, indicates that despite the study of many types of information asymmetries, these models do not examine the situation of managers' ignorance about consumer demand: they assume that profit-maximizing firms know the level of consumer demand and price sensitivity, are aware of the factors that affect price search, and incorporate this knowledge into their pricing decisions.

Asymmetric Information Games

Milgrom and Roberts (1986) review the research on asymmetric information games (AIG) in industrial organization and other areas. AIG formulations can provide insights beyond those obtained beyond traditional game analyses. For
example, in an assessment of entry-deterrence by existing firms, Milgrom and Roberts (1982) model informational asymmetry by allowing potential entrants to ascribe some positive probability to choice of 'nonrational' behavior, e.g., to predatory pricing even if profit would be higher under market-sharing than under predation. The established firm's consideration of entrants' expectations about its actions gives it an incentive to "prey," namely, to build a reputation which deters potential entrants. Thus, the adoption of this analytical framework demonstrates that predatory action by a firm may, in fact, be a rational strategy to deter potential entry. Moreover, the extensive form game explicitly models the sequence of actions, the information available to agents at each move and the consequences of not adopting equilibrium behavior.

Nevertheless, the ability of game-theoretic frameworks in general to provide the foundation for descriptive models of market competition has been strongly questioned. Such models consider "increasingly obtuse, hypothetical situations in which players, alike except in preferences and their position with respect to the task environment interact" (Kadane and Larkey 1983, p. 1375). Since the complexity of these models increases directly with the number of guesses and counterguesses attributed to each player, mathematical tractability is a key determinant of what issues are studied. Even in frameworks which consider asymmetric information or even 'irrationality' (cf. Milgrom and Roberts 1982), the optimal solution is derived from the firm's deliberate, rational examination of probabilities and payoffs of different sequences of actions. Finally, even the most
sophisticated formulations do not consider situations of imperfect manager informedness or expectations about their consumers.

**Assumptions About Market Knowledge**

The AIG formulations also demand rationality of the decision-maker: "the sort of inferences, calculations and forecasts that agents are making in equilibrium involve [a high degree of] sophistication...the strategic players' decision problems are much more difficult than in more standard models" (Milgrom and Roberts 1986, p. 188). It is assumed that the distribution of possible values for variables in the model (e.g., cost functions of firms) is common knowledge to all players. There is also little empirical evidence for these formulations, since testing is hindered by the inherent difficulty in observing what knowledge a firm has at the time it takes a particular decision.

The basic dissatisfaction with the models of oligopolistic competition (see Joskow 1975; Blinder 1991) is also seen in the development of 'behavioral' research in oligopoly (e.g., Shubik 1975). These formulations (e.g., the behavioral theory of the firm; Cyert and March 1965) adopt the model of a "satisficing" firm rather than an optimizing one (Simon 1957). They explicitly recognize imperfections in information and in decision-making, and provide empirical evidence employing methods such as case-studies of decision processes in specific firms, or through

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4 Milgrom and Roberts (1986) recommend addressing this by means of case studies and experimental research.
large-scale business simulations. Another significant development is the growing stream of experimental economic research, dealing with topics such as cooperation and decision-making (Roth 1987 provides an overview). For instance, Thaler (1987) provides a systematic overview of empirical violations of many basic economic axioms of rationality. These empirical findings also caution against exclusive reliance on the standard economic formulations and provide a basic foundation for the development of descriptive models of managerial decisions.

Finally, an extremely significant aspect of research in the economics of imperfect information is the development of "search models" which examine the difference in price informedness between various (segments of) buyers. Search models, however, assume perfect information on the supply side of the market and specify the exact nature and type of demand information that is factored into the firm's pricing decisions.

MODELS OF CONSUMER PRICE SEARCH

Determinants of Price Search

The conceptualization of consumer behavior under conditions of imperfect price knowledge was pioneered by Stigler. His (1961) paper abandoned the assumption that buyers are perfectly informed about all price offerings in the market. Instead, buyers are assumed to know the price-distribution but not the price charged by each store. Consumers engage in search (subject to diminishing marginal
returns) due to their expectations of finding a lower asking price. This perceived benefit is greater for items with larger price dispersions across stores and with greater aggregate expenditures. The costs of search (e.g., time-costs) determine the number of stores that will be visited. Thus, the optimal amount of search is determined by equating the marginal cost and marginal return of search.

Various refinements and modifications to the original formulation have been made (see Phlips 1988). Research attention has focused on delineating factors affecting the amount of search. For example, if prices are correlated over time, search will be larger in the initial period ('investment search') than in subsequent ones (Phlips 1988). The effective amount of search will be greater for larger fractions of repetitive buyers in the market (Phlips 1988) and a higher rate of price obsolescence in the market (Ratchford 1982). The original formulation assumes that consumers know the price dispersion. Rothschild (1974b) derived similar optimal search rules but with an unknown price distribution. Similarly, Stigler's model assumes a predetermined fixed number of stores to be searched by consumers. In contrast, a sequential search strategy may be more plausible in both price models (Rothschild 1974a) and quality models (Nelson 1970, 1974). Such a strategy posits that consumers update their price knowledge with every store visited, which affects whether search continues. Wilde and Schwartz (1979) suggest that consumers rely on both sequential and sampling strategies such that they predetermine some number of stores to be searched based on costs and potential gains of search, but stop searching if prices are encountered that are perceived to be "bargains."
In addition to deriving equilibrium prices under condition of imperfect buyer information, search models indicate the manner in which consumer price ignorance can be reduced, namely, price advertising. Stigler (1961) noted that greater consumer ignorance would imply higher search costs and thereby increase the cost of purchase to the consumer. The higher search required for larger dispersions would lower sales in these categories. The solution is for the manufacturer to advertise prices, especially for products which have a high marginal value of search (Stigler 1961). This in turn implies that price dispersion would be reduced most, through price advertising, for commodities with large aggregate expenditures.

**Assumptions About Market Knowledge**

Models of information search represent an important conceptual advance in studying price-determination in imperfectly competitive markets since the equilibrium price dispersion in such models represents a very different solution than in the case of perfect information. Search models have been usefully adapted to describe aspects of information search in the field of consumer behavior as well (see Urbany 1986). It is, however, interesting to consider the assumptions about managers' knowledge implicit in these formulations. Although the formulations lack a framework to describe adequately the firm's reactions, the postulated effects of buyer search on the equilibrium price dispersion indicate that they have implications for pricing decisions (Rothschild 1974a,b).
Search models posit a fundamental link between buyers' price informedness and the prices prevailing in the market. In Stigler's pioneering (1961) formulation, the price-dispersion in the market is itself a direct measure of buyer ignorance. Since consumers who search more get a better price than those who search less (Salop and Stiglitz 1977), the existence of a price-dispersion in market equilibrium with many firms and free entry is explained only by the degree of consumer price ignorance (Salop 1977; Wilde and Schwartz 1979). Price dispersion is due to firms discriminating between informed and uninformed buyers, i.e., they charge informed buyers a competitive price and uninformed buyers their reservation price. Thus, the firm is assumed to have accurate knowledge about consumer search and price sensitivity which enables them to price at the optimal level, given the proportion of informed and uninformed buyers in the market.

Similarly, the persistence of the price dispersion in equilibrium is explained in terms of deliberate strategies adopted by decision-makers. High price search and subsequent price competition by firms would cause the price dispersion to narrow over time. Therefore, firms cause intentional price fluctuations ("sales") to blur a high-price image and to prevent learning over time by consumers (Varian 1980). Overall, then, models of information economics imply a dynamic in which the pricing behavior of a firm is immediately and perfectly responsive to patterns of consumer information and ignorance.

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5 Albeit an inflated measure, if some of the variance in prices reflect actual product differences.
Descriptive Adequacy of Traditional Economic Models of Pricing

Of direct interest to the present research is the extent to which the characterization of manager informedness about demand conditions corresponds with actual pricing decisions in imperfectly-competitive markets. Specifically, the normative formulations (e.g., Wilde and Schwartz 1979; Varian 1980) imply that managers are informed about the following aspects of the market in making pricing decisions: (a) the existence of differentially price-sensitive segments of consumers (b) the factors determining search costs and benefits for each segment (c) the segments' choice rule between different stores. Such market informedness together with cost knowledge results in optimal prices being charged (reservation price to the 'ignorant' segment, competitive price to the others) to maximize profit.

Asymmetric information game models typically make assumptions about how managers arrive at pricing decisions in the face of uncertainty about competitors. Search models presume that profit-maximizing firms are aware of factors that affect consumer search, understand the extent and nature of such search and incorporate this knowledge into their pricing decisions. Moreover, it is assumed that "the capacity to process information is.. costless and unlimited. Never is an actor confused about the situation. Never is a plain old mistake made" (Nelson and Winter 1982, p.8, emphasis added).

The issue of "realism" in economic models has been addressed in different ways. It has been argued eloquently that 'unrealistic' assumptions of

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6 The theoretical formulations assume random choice.
normative models of the firm do not matter as long as the model retains its ability to predict economic behavior (Friedman 1953). This defense is also standard in economic textbooks:

"Economic theory does not require that firms know marginal costs and revenues, only to behave as if they did. Firms may come close enough to maximizing profit by trial and error, emulation of successful firms, following rules of thumb, or blind luck for the assumption to be a fruitful one" (Browning and Browning 1989, p. 227).

A second line of defense compares actual price-determination with theory and suggests that the marginal framework represents a satisfactory "first approximation" (Coase 1955, p. 394) of the process. For instance, the so-called "full-cost" debate was triggered by the findings by Hall and Hitch (1937) that managers' reported pricing strategies do not reflect theoretically-optimal equation of marginal revenue and cost and that price-setters knew (or cared) little about price-elasticity. Hall and Hitch concluded that most managers determined price on a 'full cost' basis. The reliance on cost-based pricing was also echoed in a later study: "... empirical evidence for the US suggests that cost-oriented pricing is the dominant mode of behavior...demand is found to have little, if any influence on prices outside the auction market for raw materials" (Joskow 1975; p. 165). Moreover, Lanzillotti's (1958) study of pricing objectives led him to suggest that the normative model is not a "...satisfactory basis for valid and useful predictions of price behavior."

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7 Direct cost per unit is taken as the base, a percentage addition is made to cover overheads, and a further conventional addition is made for profit.
There is, however, ample empirical evidence for the role of demand factors as well (see Bonoma, Crittenden and Dolan 1988). Bonoma et al. (1988) suggest that the firm's pricing process is best characterized as initially fixing the necessary overhead and profit percentage, and then adjusting to reflect demand and competitive factors. Heflebower (1955) suggests that the observed reliance on (full-cost) rules of thumb in setting prices is consistent with the normative demand model, i.e., the repetitive application of a pricing procedure can, by an adaptive process, be a rational reaction to cost and market considerations.

"The issues ... are (i) whether such procedures have been worked out (or evolved) so that, for the conditions for which they were designed, they are consistent with the theory of the firm and (ii) how, if at all, the procedures are revised when a change in those conditions would warrant their modification. Where a pricing method is repeatedly applied....one can claim that the test of the market has endorsed the procedures" (p. 381-382).

Papandreou (1955, p. 395) adds: "... an alternative to the rational model must either establish a high degree of invariance for the standards and rules of thumb they claim business firms employ, or offer a theory that accounts for changes in these standards and rules of thumb." This assumption that nonoptimal behavior will be eliminated by market forces is seen in more recent empirical research by Nagle and Novak (1988). They found that markups differed for different kinds of products, with them being lowest for frequently-purchased products. This was interpreted as evidence for greater consumer recall of and responsiveness to prices of frequently-purchased items. In the absence of consumer recall data, however, Nagle and Novak effectively infer how consumers behave from the
observed pricing pattern of firms; the normative implication that the price accurately reflects the market environment is assumed to be descriptively true as well.

For models which attempt to describe price-determination in an individual firm, however, it is necessary to consider the possibility that the prevailing prices and markups reflect imperfect beliefs about the degree of buyer price awareness and price sensitivity which are not immediately updated with changes in the market environment. For instance, exploratory research by Urbany, Dickson and Key (1990) found that managers systematically overestimated the degree of consumer price search in the retail grocery market. Similarly, Thaler (1987) notes that in situations where feedback following a decision is unclear, delayed or of poor quality, learning need not occur; "...in some tasks, confidence in one's judgment quality can increase with experience, regardless of the actual quality of the judgments being made" (p. 122). Thus, if learning about the market does not occur sufficiently or quickly enough, the aspirations to descriptive value (cf. Milgrom and Roberts 1986) may be misplaced.

Moreover, there is an acknowledgement of damage done by an 'overliteral interpretation' of economic models (Shiller 1991, p. 97), especially given the growing interest in developing models with improved explanatory as well as predictive power. Blinder's (1991) interviews with industry personnel to test the descriptive accuracy of many different theories of price-stickiness is a rare example of current inductive research on pricing principles.
Economic theories of price determination have been the primary basis for the development of marketing models of pricing. Recent research in this tradition has attempted to make such models more oriented to market realities by the modeling of asymmetric information structures which allow an explicit focus on consumers' perceptions about product attributes and producers' expectations about competitor reactions (Devinney 1988). Even with these innovations, these models still do not fully answer the repeated calls for deductive and inductive research on actual market pricing (cf. Morgenroth 1964; Joskow 1975; Eliashberg and Chatterjee 1985). Monroe and Mazumdar (1988) review this research and further underscore the importance of the pragmatic component:

"The recommendations that more descriptive research on pricing be done need to be followed. We simply need to know more about the decision processes and heuristics used by managers and buyers concerning price. Such efforts should also help to move pricing models from the almost exclusive reliance on an uncritical acceptance of the economic paradigm as the framework for these models" (p. 387).

Therefore, the dissertation reexamines the assumption of perfect manager informedness about buyer demand and price sensitivity, with the objective of arriving at a more appropriate characterization and obtain more 'veridical premises' (Kadane and Larkey 1983) to describe and explain the actual price decision-making process.

Typically, the empirical economic studies have had few respondents from retail firms - 3/38 and 1/20, respectively, in the Hall and Hitch (1939) and Lanzillotti (1958) studies. Many of the important empirical studies of price-determination at the retail level have been in the context of the retail grocery
industry. These studies speak directly or indirectly to the issue of managers' market informedness in price-setting and are discussed in the next section.

PRICE-DETERMINATION IN THE GROCERY INDUSTRY: EMPIRICAL RESEARCH

Characteristics of the Retail Grocery Industry

The retail grocery industry has several characteristics that make it an appropriate setting for studies of retail price determination in general and the current focus on manager informedness in price decision-making in particular. It has been described as an "excellent laboratory for the theorist and student of market behavior" (Holdren 1960, p. 3).

(i) Market Structure: it is often cited as a typical example of imperfect competition\(^8\) (Baumol, Quandt and Shapiro 1964; Phlips 1988)

(ii) Role of Price: price has traditionally been considered very important for both buyer and seller. For the consumer, store price is the most important determinant of store choice, after location (e.g., Arnold, Oum and Tigert 1983). From the firm's perspective, price competition has traditionally been the norm in this industry (e.g, Progressive Grocer 1987).

(iii) Price Decision: the decision environment is very complex, since the manager has to set the prices for hundreds of items very frequently; thus, such decisions are particularly vulnerable to errors and biases (Capps, Thomas and Long 1986).

\(^8\) It has been referred to as 'monopolistically competitive' by some researchers; Kreps (1990) however, notes that the nature of interdependence among firms suggests that it is best characterized as a 'local oligopoly with entry' (p. 345).
Information on market conditions may be available to the decision-maker from several sources: (a) store managers who have first-hand information about local consumers (b) routine intra-organizational research reports (c) market surveys of shopper behavior and attitudes, contracted by managers or offered by local media (d) trade press reports about industry practices and market environment and (e) detailed scanner information about demand such as price-sensitivity and brand and store-switching behavior. The introduction and diffusion of scanner technology was hailed as a breakthrough which could make "...in-store empirical measurements realistically useful in setting prices" (Little and Shapiro 1980, s209). Moreover, the introduction of scanning equipment nationwide has resulted in the availability of detailed market information. Such information however, tends to be too voluminous, untimely, and is difficult to use or to retrieve for past time periods (Capps et al. 1986). While academic scholarship has benefitted greatly from this transformation of the information environment (e.g., Guadagni and Little 1984), it is not clear whether and to what extent retailers' competitive pricing decision processes have been affected.

Decision-making in this industry tends to be dominated by 'seat-of-the-pants' or 'gut-feel' decision-making (Capps et al. 1986, p. 17) and by common decision heuristics rather than formal structured decision-making processes. The decision itself is complex, requiring the determination of an overall gross margin for each store by upper management, after which the merchandising manager must derive margins for departments, commodity classes and thousands of individual
items, as well as markdowns. The effectiveness of price specials and displays and impact on contributions to overhead is difficult to estimate.

These factors constitute a complex information and decision environment in which managers may be imperfectly-informed about demand, causing prices to deviate from the equilibrium price of marginal or game-theoretic formulations. Thus, it is ideal for the study of the extent to which the persistence of price dispersion is due to managers' informed responsiveness to consumer price awareness and price sensitivity.

Managers' Perceptions of Price Sensitivity

Holdren (1960) did an in-depth descriptive case-study of a local grocery market with particular focus on estimating cost and demand functions. He observed that the price-dispersion had a distinct pattern: prices were fixed for some commodities but varied widely for goods with hard-to-determine quality, high consumer ignorance or low budgetary importance. Managers were well informed about rivals' prices for only highly competitive commodities which had low margins and very similar prices among firms.

Holdren noted that even with the existence of imperfectly informed buyers, managers displayed little pricing skill; administrative constraints and manager ignorance about costs (and in some instances, about their own pricing policies) perpetuated market inefficiencies (such as suboptimal margins). He further commented on managers' lack of awareness about "...how far their pricing policies
deviated from their own beliefs concerning what their pricing policy is" (p. 73). A similar study by Preston (1963) concluded that the "variability of markups can be explained in terms of the retailers' search for profits, limited by pressures of competition and implemented by the application of rules of thumb" (p.1). More recently, Nagle and Novak (1988) found that grocery markups differed for different kinds of products, with mark-ups being lowest for frequently-purchased products.

Although the theoretical work in marketing on consumer price search has been growing over the years (see Urbany 1986), it is intriguing that there has been little corresponding formal analysis of information imperfections in managers' pricing decisions. This is particularly important given the preliminary evidence that a focus on this issue would be appropriate. Little and Shapiro (1980) empirically tested an econometric model of price determination based on profit maximization subject to consumers' utility-seeking constraint, taking into account concerns over store loyalty and future custom. They found that supermarket prices were too low, given the estimated price sensitivity; they suggested that supermarkets act "as if the customer is considerably more sensitive to prices than customer actions in the store seem to indicate" (p. s199).

A tendency toward competitive price reductions is also echoed in a series of experimental field studies on the effect of the availability of comparative store price information on market prices. An initial study by Devine and Marion (1979, 1980) found that during the test period, average prices fell 7%, price dispersion decreased, 25% of shoppers switched stores and market basket price level
rebounded by 8.8% following the termination of the test. Price publication increased consumer knowledgeability about store prices and thereby, increased the competitiveness of markets. Other studies, however, caution against automatically assuming that prices reflect actual consumer behavior. A replication of this study by Boynton, Blake and Uhl (1983) found that price reporting affected prices set in that it reduced relative food prices during the test period, after which prices rose again. An important difference between the results of the two studies is that changes in price-level and dispersion occurred in the absence of store-switching by consumers. Thus, managers' awareness of the availability of price information influenced their pricing decisions without reinforcement from consumers. The severe price competition observed during this period reflected anxiety over public exposure of prices, and anticipation of the negative effect such information could have on current and potential shoppers. Availability of this information, however, did not change buyer shopping behavior.

The comparative surveys by Urbany, Dickson and Key (1990) provide more direct evidence that managers' understanding of the magnitude of market parameters may be less than perfect. They found that grocery pricing executives overestimated the extent of consumer price vigilance in their market by a substantial margin. Similarly, Urbany and Dickson (1991) document a high degree of pricing reactivity. They note that managers may focus more on competitor pricing

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9 However the magnitude of these changes was smaller than in the Devine and Marion research.
behavior rather than on understanding buyer behavior in setting prices. The resulting tendency to lower prices automatically in response to competitive pressures can lead to attempts to 'out appeal' rivals in every way, which could be to the detriment of industry profitability (cf. Eliashberg and Chatterjee 1985). Initiating price changes can lead to similar market beliefs among managers through learning over time about price sensitivity and the success of pricing moves (Cyert and DeGroot 1973), but the automatic mimicking of competitive behavior frustrates this learning process, since "...the unskillful entrepreneur may survive in this market for a very long time indeed" (Holdren 1960). Collectively, the studies reviewed in this section lay open the possibility that the demand effects in a descriptive price model may not reflect actual consumer sensitivity but rather managers' (possibly-biased) perceptions of such sensitivity. Thus, it is suggested that managers' "market beliefs" are not necessarily as accurate as postulated in the traditional economic framework.

SUMMARY

Models of competition and information economics attribute a high degree of market informedness to the price-setter in decision-making. Such informedness relates to knowledge about consumer price awareness and price search among different stores and the degree of their price sensitivity. The available empirical evidence suggests that models which attempt to describe and explain actual behavior should reevaluate this assumption. Accordingly, the dissertation focuses on managers' "beliefs" about their markets as driving decisions, rather than
assuming that optimal prices are set, based on (perfect) objective knowledge and the profit maximization objective. The next two chapters examine the conceptual and empirical evidence for managers' market beliefs.
INTRODUCTION

The growing interest in developing explanatory models of pricing requires that the dominant economic framework be supplemented by behavioral research on human judgment, social interaction and social cognition (Weitz 1985). This is because "..to predict how economic man will behave, we need to know not only that he is rational but also how he perceives the world" (Simon 1957, p. 278). Differential seller knowledge is yet to be fully appreciated as a source of competitive advantage (Barabba and Zaltman 1990). This chapter reviews relevant theory on beliefs and belief structures and the application of a cognitive perspective to managerial and organizational decision-making. It emphasizes the importance of managers' prior subjective knowledge ("beliefs") as a source of 'informedness' in making decisions. The review of the literature leads to a model of information use and corresponding research hypotheses.
THE UTILIZATION OF NOVEL INFORMATION

The dissertation addresses the utilization of novel information in managerial decision-making. From a fundamental communications perspective, this is a somewhat redundant characterization. By definition, information that is not novel has little informational value (Shannon and Weaver 1962). The occurrence of a low probability event has a higher informational content than when a more frequently observed event occurs. Thus, novel information should be valued more and utilized to a greater degree (e.g., Wilton and Myers 1986).

In any decision situation, however, in addition to externally available structured information, a basic source of information is internal knowledge which represents information learned in the past (Sherman and Corty 1984). Such experiential knowledge, represented by tacit understandings and informal skills, can compete with formal, analytic knowledge (Holzner and Fisher 1979). In the context of pricing decisions, this implies that a price-setter's "informedness" is derived not only from market information but also from prior beliefs about the market. Various factors that affect the manner in which these sources of information are combined in judgment and decision-making are discussed in the next two sections.

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10 The term "market beliefs" is used hereafter to refer to a manager's subjective knowledge about his/her market.
The Normative Formulation: Bayes Theorem

Bayes theorem formalizes the process of how priors about an unknown parameter should be revised or modified by new data. Specifically, it states:

\[ p(S_i|E) = \frac{p(E|S_i) \cdot p(S_i)}{\sum_{i=1}^{n} p(E|S_i) \cdot p(S_i)} \]

\( P(S_i) \) is the distribution of some parameter prior to the availability of information, while \( p(S_i|E) \) is the posterior distribution after the data is made available. According to the theorem, the posterior probability is based on the prior beliefs \( p(S_i) \) and a likelihood function for \( S_i \) given \( E \); \( P(E|S_i) \) is the 'change agent' that relates the observations to the parameters. Thus, the numerator is the joint probability of observing \( E \) under state of nature \( S_i \). The posterior distribution makes a complete inferential statement about the unknown parameters and prescribes how the final decision should combine information in an optimal manner.

According to this normative formulation, the extent to which new information should update priors depends upon the relative "precision" of the prior distribution and the new information. It indicates the appropriate weights that should be assigned to all relevant sources of information in decision-making. For example, the posterior mean is an average of the prior and sample mean, each weighted by the appropriate precision. When priors are highly uncertain, the posterior distribution will be determined mainly by the data. Moreover, since sample

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11 This section is based primarily on Green and Tull (1978) and Pollard (1983).
precision increases with sample size\textsuperscript{12}, the data should have a greater effect on the posterior distribution if it is obtained from a large sample (it is statistically more reliable). As the amount of data increases, two individuals with different prior distributions should have increasingly similar posterior distributions. Thus, the effect of external information can be assessed by comparing the prior and posterior distributions; changes in central tendency and spread represent changed beliefs about the parameter values and about the associated uncertainty.

**The Descriptive Formulation: A Cognitive Approach**

The research in social cognition and decision-processes reveals several instances where priors are not updated with current information according to the normative formulation. One or other type of 'information' may be overweighted more than is optimal. This is due to factors arising from 'bounded rationality' which suggests that statistically-reliable information may not be used optimally by the decision-maker due to forgetfulness, mistakes and limited information-processing ability\textsuperscript{13} (Slovic et al. 1977; Kahneman, Slovic and Tversky 1982). Suboptimal information use may also be caused by a reliance on various information-processing heuristics; "not as much power is extracted from the information because the decision-maker ignores useful information, attends to useless information or

\begin{itemize}
\item[12] For example, with a normal distribution, the sample precision=$1/\left(\sigma^2/n\right)$
\item[13] The operation of biases may result in a contradiction of the 'coherence' axiom which is fundamental to the Bayesian perspective, i.e., the notion that individuals' judgments, preferences and actions should be internally consistent or fit together.
misweighs or miscombines the available categories of information" (Sherman and Corty 1984, p.231). An underweighting of prior knowledge relative to current information may occur due to an "availability" bias (relying on the most salient or readily available information) or a "representativeness" bias (regarding isolated external data as representative of the situation). The present focus is on the opposite case: the overweighting of prior beliefs relative to information which may occur due to an anchoring bias (judgment is unduly influenced by an initial starting point or 'anchor').

The existence of these systematic deviations from 'optimality' suggests that descriptive studies of managerial decision-making should focus on the intervening process underlying judgments. Accordingly, an interdisciplinary approach is adopted in the present research, which focuses on managers' market beliefs and their effect on information evaluation and use in setting market prices.

BELIEFS AND BELIEF STRUCTURES

Beliefs are relational mental states, or mental representations of reality (Smith et al. 1991), stored in memory as components of schemata or belief structures - organized representations of existing knowledge (Rosch 1978; Srull 1981; Alloy and Tabachnik 1984; Alba and Hasher 1983; Markus and Zajonc 1985). A belief structure "...represents organized knowledge about a given concept or type of stimulus" (Fiske and Taylor 1984, p. 149). It reflects perceptions of the relationship between different concepts ("state-of-nature beliefs") and relationships among
attributes ("covariation beliefs"). Moreover, since beliefs are abstract representations of reality, they need not be accurate.

Prior beliefs affect judgments at several points in the assessment process: deciding which data are relevant, sampling and interpreting information, recall, integrating evidence and using beliefs to make other predictions or judgments (e.g., Crocker 1981; Markus and Zajonc 1985). Effectively, therefore, beliefs function as knowledge surrogates that facilitate decision-making. Since belief structures guide information processing, they act as frames of reference which direct attention to particular experiences and items of information (Bower et al 1979; Snyder and Uranowitz 1978; Holzner and Fisher 1979). This contrasts with the normative assumption that prior beliefs and external information represent independent sources of informedness.

SELECTIVE INFORMATION USE

Belief-Discrepancy and Information Use

A consideration of the effect of beliefs on information use is particularly important in situations where new external information is either belief-consistent or belief-discrepant. The utilization of external information is affected by the combined operation of two opposing influences (Frey 1981). Individuals seek information 'rationally' to clarify the accuracy of one's choice and to enable better decision-making. They do, however, also have a tendency to use information
selectively to support a favored alternative or a decision that has already been made. The term "selective information use" refers to both the preference for belief-supportive information and the avoidance of belief-discrepant information; however, one need not necessarily imply the other (Mills 1968; Frey 1981).

A review of the literature indicates that the phenomenon of selective information use is a fairly robust one. When individuals are faced with belief-discrepant information, a process of biased assimilation occurs (Lord, Ross and Lepper 1979) in which individuals tend to acquire and use information that is consistent with their prior beliefs; correspondingly, they may discount, evaluate more negatively or dismiss information that is belief-discrepant. Subjects were able to detect an expected relationship more readily than an inconsistent one (Crocker 1981). Similarly, people tend to choose cases from presented information that confirm, rather than discount, a prior hypothesis (Klayman and Ha 1989; Fischhoff and Beyth-Marom 1983). In a review, Nisbett and Ross (1980) concluded that perceptions of covariation are largely determined by prior expectations (also Crocker 1981). Several other studies document the occurrence of this phenomenon but question whether it occurs due to cognitive factors (the inconsistency of belief-discrepant information with preexisting self-knowledge; Pyszczynski, Greenberg and Holt 1985) or due to motivational factors (individuals do not want to believe information to preserve self-esteem; Kunda 1990). The relative influence of these factors is beyond the scope of the dissertation and will not be examined further.
The phenomenon of selective information use reflects an anchoring bias (Tversky and Kahneman 1974) in that final judgments are biased toward initially-considered values (Sherman and Corty 1984, p. 225). Since a belief is often formed by previous information/experience about the relationship between two events, a resistance to changing the belief implies that the initial experience has a disproportionately large impact on later perceptions (Alloy and Tabachnik 1984). When new contradictory information is available, the subsequent analysis does not adjust the initial impression sufficiently (Ross, Lepper and Hubbard 1975).

In summary, a high level of confidence in beliefs may lead to a failure to update them with current situational information according to Bayesian prescriptions when making judgments and decisions (Sherman and Corty 1984). If the data is inconsistent with confidently-held beliefs, individuals will tend to discount the information. Moreover, if the data are ambiguous, they will be interpreted to be in line with the prior beliefs (Kunda 1987). The operation of selective information use in a pricing decision context would imply that price-setters seek information that reinforces their market beliefs with a corresponding discounting of belief-discrepant information. Therefore, prices may be based on an outdated understanding of the environment. This tendency to favor the status quo implies that an exclusive reliance on normative rational choice models would exaggerate the responsiveness of marketing mix variables to environmental changes (Samuelson and Zeckhauser 1988).
Market Beliefs

The consideration of the influence of managerial beliefs in decision-making presumes the existence of "market beliefs." In the marketing literature, however, there are few references to this construct. The original study on consumers' market beliefs was conducted by Duncan and Olshavsky (1982). They examined the effect of market beliefs on consumers' information search activities. The "market beliefs" examined by these researchers consisted of an inventory of 17 relationships between several market variables (p. 34), including beliefs about brand ("the same brands tend to be the best year after year"), price ("to sell at prices lower than the competition, a manufacturer must sacrifice quality"), ability to judge ("generally speaking, I am not a particularly knowledgeable shopper") benefits of search ("I need to look at all the available choices if I am to tell which is the best one") and the much-emphasized relationship between price and perceived quality.

The results indicate that while only 5/17 beliefs were significant in a multiple-regression analysis, the beliefs collectively accounted for 50% of the variance in consumers' predecision information search. While this is consistent with the conceptualization of belief structures as frames of reference (Snyder and Uranowitz 1978), the magnitude of the variance explained is an encouraging signal of the potential role of market beliefs in information utilization in a marketing context.
Wright (1986) also addressed the idea that consumers have intuitive
theories about influence attempts made by marketers ("schemer schema") and
suggested that it is essential to understand consumers' beliefs about how marketers
operate. Duncan (1990) explicitly summarizes the nature of (consumers') market
beliefs as follows: "(they) express generalized associations between classes of
objects, between product attributes and notions about how the marketplace operates
over time ... convey information about the association between independent market
concepts" (p. 729). He suggests that consumers' market beliefs have the following
characteristics: (a) there is a large number of these beliefs with only a few being
salient for any given decision (b) they vary from consumer to consumer (c) the
salience of each belief and the confidence with which it is held will be affected by
situational factors (d) they may be employed individually and in combination, and
(e) they are resistant to change (p. 730). He emphasized that further research is
critically needed to understand the formation and composition of belief structures,
their accuracy, and their influence on information search.

The dissertation focuses on managers' beliefs about their market
environment. Such beliefs represent managers' understanding about different
variables in their markets, how their markets operate, and the relationships between
various marketing mix variables and consumer and competitor response. One of the
few empirical studies on market beliefs in this context (to date) is one by Urbany,
Dickson and Key (1990). They conducted a mail survey of 12 senior executives in the
retail grocery industry and measured their beliefs about price sensitivity and price
search activities of consumers in their market. Additional research, particularly of an empirical nature, is required to understand the role and nature of market beliefs in managerial decision-making. This is addressed through a relatively large-scale study updating Urbany, Dickson and Key (1990) which identifies and measures specific market beliefs that are relevant for making pricing decisions (see Chapter IV).

Selective Information Use: Studies in Organizational Behavior

The relevance of the issue of managerial cognitions and effects on information use have been studied far more extensively in the fields of organizational behavior and strategy than in marketing. Research in this tradition emphasizes the link between individuals' cognitive representations of the environment and decision-making. This perspective parallels the trend toward the adoption of a "user" focus (stressing the user's abilities, circumstances and values) in sociological studies of knowledge generation and utilization. This is in contrast to the earlier focus on the characteristics of information or information-dissemination, i.e., a "product" focus (Zaltman 1979) or of the decision (e.g., Mintzberg et al. 1976).

Walsh (1990) provides a comprehensive review of the research on beliefs structures and decision-making in the organizational context. Organizational knowledge structures are recognized as affecting a firm's actions directly. For example, Dutton and Jackson (1987) suggest that a firm's representations of events
as "threats" or "opportunities" influence the choice of strategy. Other research in the strategic choice paradigm echoes this conclusion. For example, a study of the machine-tool industry by Day and Lord (1989) found that some of the variance in strategy was explained by the belief-structures of senior managers. Similarly, Porac, Thomas and Baden-Fuller (1989) report that managers' perceptions of competitive boundaries were linked to market transactions and to the formation of strategic groups within the industry.

Belief structures may also affect decisions indirectly, for example, by influencing the nature of "problem-sensing" (cf. Kiesler and Sproul 1982) or affecting information evaluation and use. A classic study on selective perception in the organization was reported by Dearborn and Simon (1958), who found that managers' choice of concepts as indicators of organizational success was linked to their own functional areas. Similarly, a case study of three corporations found that the perceived importance of various indicators of environmental strengths and weaknesses varied between top, middle and technical managers (Ireland et al. 1987).

Other researchers have focused on the structural characteristics of the organization that may shape the organizational environment. Organizations structure the information environment so that relevant data, methods or other specific information are made available (Pfeffer and Salancik 1978). Furthermore, through training, performance feedback, practice and organizational rituals (Ashforth and

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14 A recent replication of this study (Walsh 1988a) failed to find evidence for such parochial information use.
Fried 1988), belief-structures may become highly standardized and institutionalized (Walsh 1988b; Gersick and Hackman 1990). Therefore, common attitudes and patterns of behavior (they become part of the organizational culture; Snow 1965) may prevail among members of an organization that is formalized or centralized in its decision-procedures. To the extent that belief-structures affect information usage, this would imply that differential information evaluation and use would occur in more formalized and centralized organizations. This is, in fact, a key finding of the study by Deshpande and Zaltman (1982).

Another important influence on belief formation is the manager's experience and the degree to which such experience has translated into (perceived) expertise. Experience leads to better-developed cognitive structures which allow for effective problem structuring, thereby affecting information search and evaluation (Fiske and Taylor 1984; Alba and Hutchinson 1987). At advanced knowledge levels, heuristic driven processing is likely to be the norm (Sherman and Corty 1984). The beliefs and corresponding decision rules used by experts may be better than those of novices if they incorporate more information (Rao and Monroe 1988; Carroll 1980). Experience has been shown to result in differential utilization of information by marketing managers (Perkins and Rao 1990). If, however, expertise amounts to little more than knowledge of relevant accepted conventions\(^{15}\), experts may be as susceptible to decision biases as novices even in familiar decision-settings.

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\(^{15}\) This is likely to be the case in situations with no objective standard of what constitutes an optimal decision.
(Northcraft and Neale 1987). Greater expertise is likely to result in beliefs being held with greater confidence, but not necessarily in more "accurate" decision-making or information-use.

Characteristics of the information can also affect the use of information. For example, managers should display a greater reliance on information sources with which they have had more experience (Huberman 1987). The major factors identified in the literature as influencing the development of belief structures and affecting organizational information use are summarized in Table 1.
TABLE 1

FACTORS INFLUENCING ORGANIZATIONAL BELIEF STRUCTURES
AND INFORMATION UTILIZATION

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formalization, Centralization</td>
<td>• Deshpande and Zaltman (1982)</td>
</tr>
<tr>
<td>Organizational Socialization</td>
<td>• Ashforth and Fried (1988)</td>
</tr>
<tr>
<td>Information Environment</td>
<td>• Pfeffer and Salancik (1978)</td>
</tr>
<tr>
<td>Status of Research Activity</td>
<td>• Huberman (1987)</td>
</tr>
<tr>
<td>Familiarity with Type and Provider of Information</td>
<td>• Huberman (1987)</td>
</tr>
<tr>
<td></td>
<td>• Deshpande and Zaltman (1982)</td>
</tr>
<tr>
<td>Manager's Experience or Expertise</td>
<td>• Ashforth and Fried (1988)</td>
</tr>
<tr>
<td></td>
<td>• Northcraft and Neale (1987)</td>
</tr>
<tr>
<td></td>
<td>• Cox and Summers (1987)</td>
</tr>
<tr>
<td>Functional Affiliation</td>
<td>• Dearborn and Simon (1957)</td>
</tr>
<tr>
<td></td>
<td>• Walsh (1988a)</td>
</tr>
<tr>
<td>Level in Organizational Hierarchy</td>
<td>• Ireland et al. (1987)</td>
</tr>
</tbody>
</table>
Selective Information Use: Studies in Marketing

There is some empirical research in marketing that addresses the issue of selective information use. In the consumer behavior context, John, Scott and Bettman (1986) found that subjects' beliefs about the relationship between price and quality influenced their search for information. The early evidence for managers' selective information use is obtained from a survey of marketing managers by Deshpande and Zaltman (1982) who found that managers reported they would be less likely to use "surprising" information.\(^{16}\)

Lee, Acito and Day (1987) examined the effect of expectations in information use in a laboratory study using MBA students in an unfamiliar decision-setting. When the recommendations from market information were consistent with prior expectations, subjects were more confident of their preferences for information and evaluated it as of higher quality than when the information contradicted expectations. The influence of expectations was far greater than the statistical reliability of the market information. Narayanan and Lehmann (1991) also report that subjects' attributions of causality were affected less by the statistical reliability of information than by counter-intuitiveness of information. Subjects in this study also paid more attention to joint occurrences than to joint nonoccurrences (cf. Klayman and Ha 1987) in making judgments of probable cause. These studies indicate that this is indeed a fruitful area for research efforts in

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\(^{16}\) This tendency is likely to be even more pronounced if such information had not been specifically requested (Pfeffer and Salancik 1978).
marketing. There is evidence for increasing interest in this issue. A recent conceptualization on the use of market research information identifies managers' "prior knowledge and beliefs...and heuristics and biases as antecedent factors" (Bharadwaj 1992, p. 197).

FIT OF BELIEFS TO ENVIRONMENT

Beliefs can cause selective memory, affect the evaluation and use of information, and lead to the indiscriminate and inappropriate use of heuristics (Hogarth 1980; Crocker 1981). The implications of a selective information use bias in pricing decision-making are even more profound and far-reaching if managers' market beliefs do not correspond to objective reality. In discussing their findings on selective information use, Lee et al. (1987) note that "whether or not...(this) is undesirable depends on one's view of the general quality, accuracy and validity of corporate marketing research" (p. 194, emphasis added). The possibility is not considered is that market beliefs may not be "accurate." An emphasis on the "fit" between market beliefs and the market environment rather than that of information quality is important for two basic reasons. First, belief structures are necessarily imperfect cognitive representations of the environment (Alba and Hasher 1983; Markus and Zajonc 1985). Walsh (1990) notes the need for research assessing the "nature of useful simplicity" of these representations. An exploratory study by Urbany, Dickson and Key (1990) reports that managers generally overestimated the degree of consumer price-sensitivity in their market (cf. Little and Shapiro 1980).
Second, the emphasis on information availability rather than on information use is somewhat misplaced given the significant improvement in the quality and quantity of information due to technological advances.

Many organizational scholars have been concerned with the potential lack of "accuracy" of managers' belief structures and with associated biases (e.g., Dearborn and Simon 1958). While belief structures facilitate perception, interpretation of and memory for situational information (Taylor and Crocker 1981), their operation can lead to systematic bias and distortion, giving rise to behavior based upon an 'impoverished view of the world' (Weick 1979, p. 68).

The characterization of decision-processes as 'irrational' or 'inaccurate,' however, requires an objective criterion of accuracy which is often nonexistent for problems used in the study of heuristic use (Sherman and Corty 1984; Northcraft and Neale 1987). Nevertheless, the assessment of fit of market beliefs with the market environment is important when evaluating pricing decisions. It implies that prices may be based on market beliefs that are not accurate, and furthermore, that these beliefs may continue to be held and applied with confidence due to a failure to consider relevant information that could update them. Therefore, these market beliefs need to be compared against some benchmark of objective reality. The dissertation addresses this by comparing managers' estimates about various aspects of consumer behavior with consumers' estimates of their own behavior (cf. Urbany, Dickson and Key 1990).
A final consideration is the type of decision contexts in which selective information use is most likely to occur. In many cases individuals do attempt to evaluate their beliefs using salient and relevant information (Alloy and Tabachnik 1984; Jennings et al. 1982; Wilton and Myers 1986; Payne et al. 1988; Peterson and Pitz 1988). Accordingly, the appropriate decision setting in which to examine these effects was identified based on a review of the debate of the legitimacy of this phenomenon.

The Selective Exposure Debate

Researchers in the cognitive dissonance paradigm have noted the tendency of individuals who have made a choice to prefer information that supports rather than contradicts an already-made decision, i.e., "selective exposure" (see Frey 1982 for a review). Selective exposure is postulated to occur because supportive information reduces cognitive dissonance associated with the decision. It is important to recognize that these studies deal with the use of information that is decision-consistent rather than belief-consistent. Moreover, contrary to the dissertation focus, they assume that prior to the decision, information choice is dominated by the need to make a good decision. Nevertheless, a brief review of this research is presented because it helps identify situational characteristics which are more likely to result in selective information use.

A vigorous debate over the legitimacy of the selective exposure phenomenon was sparked by Freedman and Sears (1965). They concluded that
subjects very often prefer information that is not supportive of their decision or show no difference in preferences between supportive and nonsupportive information. For example, Feather (1962) found that subjects who were presumably highly ego-involved in an issue (smoking) preferred nonsupportive rather than supportive information. Others (e.g., Frey 1982) have contended that these conclusions are too hasty in their dismissal of selective exposure with respect to information utilization. Frey (1982) points out that while subjects in Feather's (1962) study did show greater interest in nonsupportive information, they also found it less convincing, i.e., discrepancy may be interesting yet not persuasive.

Discrepant information may also be more memorable. This is evident from a consideration of how such information is represented in memory (Sujan and Bettman 1989). Belief-structures in a particular domain comprise beliefs about expected values for variables, importance weights for each and perceived variability across these attributes (Bettman 1979). When new information is incongruent with beliefs, it can be either assimilated or accommodated in memory. When the degree of discrepancy is low or moderate, it is assimilated: discrepant items are linked weakly to the schema by 'tags,' and therefore, memory for such items will decline over time (a Schema Plus Tag model; Graesser, Gordon and Sawyer 1979). When information is strongly discrepant from schematic expectations, however, a process of accommodation is postulated to occur: the Subtyping model proposes that discrepant information is then processed very thoroughly and subcategories are formed to accommodate these items, leading to greater recall for these items.
In addition, many of the early studies on selective exposure suffered from concerns about internal validity due to confounding factors such as greater availability of supportive information, differences in demographic profiles and individual characteristics of decision-makers (Freedman and Sears 1965; Frey 1978, 1982). Mills (1968) also suggests that the empirical support for selective use of supportive information is more compelling than that for the avoidance of negative information. Frey (1982) concluded that an appropriate characterization of the results of these studies is that selective exposure is not a universal phenomenon but is determined by various situational factors. Information is taken into account in judgment and decision-making, but errors occur that are systematically influenced by prior beliefs (Alloy and Tabachnik 1984).

Hogarth (1980) suggests that decision situations most subject to judgmental biases include those with high task complexity, procedural uncertainty, absence of psychological regret and emotional stress. The collective evidence from the reviews by Mills (1968) and Frey (1982), however, suggests that there will be greater preference for supportive over discrepant information in many situations. Selective exposure is expected to occur in situations in which there is low perceived importance for the decision-task, greater public commitment to the decision, more familiarity with and perceived competence of the source of the supportive information (Frey 1981) and low ability to refute discrepant information (Kleinhesselink and Edwards 1975; Frey and Rosch 1984); conversely for belief-discrepant information. These characteristics are most likely to appear in routine
decisions, those which are made very frequently and for which procedures have been established, i.e., the importance of each individual decision and of each individual item of information is low. The parallel in the organizational context, namely, routine decision-making, is examined next.

ROUTINE DECISION-MAKING

The social cognition literature also links the development of belief structures to the formation and use of decision heuristics (Sherman and Corty 1984). In fact, Walsh (1990) suggests that belief-based information use and decision-making is "likely to predominate in all but the most novel of situations" (p.1) on account of the bounded rationality of managers. Many organizational behaviors consist of habitual responses, governed by standard operating procedures, to frequently encountered situations. Individuals use a checklist of routine components which may overrule stimuli from the environment in governing decisions (Weiss and Ilgen 1985; Ashforth and Fried 1988; Gersick and Hackman 1990). Such routines increase confidence by reducing procedural uncertainty and enable a quick response.

Once established, habitual behavior may persist automatically unless some specific event occurs to breaks the routine such as a failure to achieve a goal (Louis and Sutton 1991; Gersick and Hackman 1990) or unless the pressure for change exceeds a certain threshold (DeSarbo et al 1987). An "automatic launch" into an established routine, even when the environment has changed, can lead to miscoding of situations and stimuli and impede the ability of the organization to
learn (Gersick and Hackman 1990). Thus, organizations with habitual decision routines may become desensitized to environmental changes.

The above research suggests that it is in the context of routine decision-making that the effects of organizational and individual belief structures are likely to be most pronounced. The habitual nature of the decision is conducive to the selective integration of primarily supportive information. Routine pricing decisions may be based more on standard decision-practices and heuristics than on available market information.

CONCEPTUAL MODEL AND HYPOTHESES

The literature reviewed above leads to a general conceptual model of the role of market beliefs in managerial decision-making, expressed in the followed schematic diagram (see Figure 1).
Figure 1: Conceptual Model: Effects of Market Beliefs on Information Use in Managerial Decision-Making
The figure indicates that market beliefs may influence decisions directly (cf. Dutton and Jackson 1987). Market beliefs will also have an indirect effect on decisions, through their influence on information evaluation and use. This effect depends on the characteristics of the information (belief-discrepancy) and characteristics of the decision (routine nature of the task). Specifically, when new information is belief-consistent, it reinforces prior beliefs and will be perceived to be useful. If information is belief-discrepant, its perceived utility is affected by the type of decision-setting. If the decision is a strategic one, requiring detailed attention to all available information and recognized to have important consequences, it will be perceived to be more useful than when it is a habitual, routine decision.

The dissertation focuses on only that portion of the above conceptualization that addresses routine decision-making. In such contexts, belief-discrepant information will be perceived as having less utility in making the decision, either directly or through lowered evaluations of the quality of the information and/or of its source. It proposes to examine the occurrence of selective information use in the context of routine pricing decisions. Accordingly, the model described above together with the review of organizational factors affecting belief-structures lead to the following hypotheses:
In routine pricing decisions,

**H1:** The price will be determined more by standard belief-based heuristics than by current market information.

**H2:** Market information will be perceived to be more useful and affect the final pricing decision more when it reinforces confidently-held beliefs than when it contradicts them.

**H3:** Belief-discrepant information will be evaluated more negatively than belief-consistent information.

**H4:** The source of market information will be evaluated more negatively if information is belief-discrepant than if it is belief-consistent.

**H5a:** Beliefs will be held with greater confidence by pricing managers in more formalized and more centralized organizations.

**H5b:** Selective information use will be greater in more formalized and more centralized organizations.

**H6a:** Beliefs will be held with greater confidence by more experienced than less experienced pricing managers.

**H6b:** Selective information use will be greater for more experienced than less experienced pricing managers.

**SUMMARY**

The literature review indicates the importance and the need for a greater understanding of belief structures and information use in managerial
decision-making. Some researchers have suggested that in information-rich environments, concerns about intuitive decision-making biases may be less relevant (Hoch 1988). However, other research suggests that salient and well-established beliefs may be influential even when hard data is available (Alloy and Tabachnik 1984). Ashforth and Fried (1988) note that despite the volume of work documenting inefficiencies in information collection and use in organizations (e.g., Feldman and March 1981), the assumption persists that managers are "... cognitively alert, diligently attending to the task environment and constantly processing information..." (p. 305). Further, the "volume of theory development far outstrips empirical hypothesis testing" in the area of organizational knowledge structures (Walsh 1990, p.13).

The dissertation makes a contribution by identifying specific beliefs, linking them to observed decision practices and experimentally studying their effect on the evaluation and use, especially of belief-discrepant information in decision-making. Specifically, the studies that comprise the dissertation (i) examine the role and nature of 'market beliefs' as a variable influencing price decision-making (ii) identify and measure specific beliefs theoretically implicated as relevant for pricing decisions in a specific market (iii) compare the "fit" of managers' beliefs about consumer behavior with consumer self-reports (iv) link these market beliefs to a prevalent pricing decision practice and (v) experimentally investigate the occurrence of selective information use in routine pricing decisions in a specific market.
CHAPTER IV
EXPLORATORY SURVEY OF MARKET BELIEFS:
METHODOLOGY AND DATA ANALYSIS

INTRODUCTION

Managers' beliefs/knowledge about consumer price awareness and price sensitivity were identified, in Chapter II, as important determinants of competitive pricing decisions in imperfectly-competitive markets. From a theoretical perspective, these beliefs represent managers' understanding of their market environment which is then combined with market research information to form the foundation for the firm's market decisions. In marketing, therefore, models are calibrated routinely that postulate strategies to be responsive to changes in relevant aspects of the market environment. A basic assumption in normative formulations of firm behavior in competitive markets is that the firm's pricing strategy is determined by factors such as the magnitudes of price sensitivity, levels of demand, costs and perceptions of competitor pricing reactivity (e.g., Phlips 1988; Murthy 1985).

This chapter describes the exploratory study of managers' market beliefs. It provides a basic conceptual and empirical understanding of the nature of
"market beliefs" by studying supermarket decision-makers' beliefs about various aspects of consumer price-awareness and price-sensitivity in their retail grocery market. The beliefs that were examined in this study include: (i) direct beliefs about consumer knowledge of between-store price differentials and corresponding between-store shopping behavior (ii) beliefs about consumers' perceptions about the positioning of each store in the market (iii) beliefs about which items are used by consumers in comparing the prices of different stores and (iv) beliefs about the effects of price advertising levels on consumer perceptions of overall store prices.

METHODOLOGY

Data were collected through a mail survey of 92 managers from the 2 major firms ("A" and "B"; n=45, 47 respectively) in one local retail grocery market in a large midwestern city. These managers comprised both line managers (store managers) and headquarters staff (decision-makers). Consumers were also studied by means of a telephone survey and a subsequent mail survey (n=422). Thus, the data permit an assessment of managers' beliefs about relevant market variables - the amount of consumer price search, the manner in which store price comparisons are made and the relative importance of price and nonprice factors in store choice, - as well as of differences in beliefs between managers and consumers, between managers in different firms and between managers belonging to the same firm.

17 These two firms account for about 80% of market share.
The grocery market under study typically exhibits a high degree of price competition. In fact, according to Nielsen Marketing Research, the market had the highest consumer response to price promotions in a comparison of 10 major cities (Nielsen research 1992). Over 90% of the market is served by 4 firms. Seventy-five percent of consumer respondents report that they shop primarily at firms A and B: 37.2% at A, 36% at B. A further 12.8% shop at firm C, and firm D accounts for 9.5%. Both A and B are established firms in the market. A is a national chain while B is a regional one. In contrast, C and D are relatively recent entrants into the market and have gained some 20% market share over the last decade. Half these gains in share have come at the expense of small independents while the other half have been taken from A and B. While A and B engage in promotions pricing ("Hilo"), C and D employ an everyday low price ("EDLP") strategy.

MEASURES

The manager questionnaire was designed to measure beliefs about the managers' markets. Market beliefs that are relevant in the study of pricing decisions in oligopolistic markets were identified from theory in information economics and from empirical studies of the grocery industry (Holdren 1960; Dickson and Urbany 1991; Urbany, Dickson and Key 1990).

Market beliefs were measured in two ways. In the first instance (see Appendix A, Section I) managers were asked to provide estimates about the proportion of consumers in their market engaging in different behaviors. For
example, the percentage of consumers who primarily shop at one store all the time. Consumer self-reports on these behaviors were also obtained, resulting in comparable data for managers and consumers.

Further, managers and consumers responded to a series of multi-item 5-point Likert scales. Multi-item scales were originally formulated for each variable. Because of poor inter-item correlations for some of the scales, several items had to be dropped for purposes of analysis\(^\text{18}\) (coefficient alphas for the final multi-item measures are reported in parentheses in Table 3). The first set of scales (section II of questionnaire, items 1-7) pertained specifically to the local market (e.g., "there is a lot of price competition between local grocery stores"), while the second set (items 8-14) were phrased to be more general. The latter assessed managers' perceptions of general relationships between market variables, including (i) price search and price competitiveness of the market (ii) price competition and price dispersion and (iii) advertising levels and store price and quality.

The questionnaire thus included measures of both 'state-of-nature' beliefs and 'covariation' beliefs (Fiske and Taylor 1984) about consumers and competitors. The former comprise the beliefs about magnitudes of relevant market parameters (for example, managers' beliefs about the degree of consumer price-sensitivity), while the latter includes perceived relationships between market variables (for example, between demand elasticity and consumers' store-switching behavior). The full manager questionnaire is reproduced in Appendix A.

\(^{18}\) Deleted items are indicated with a '*' in Appendix A.
The data permit an examination of market beliefs in terms of both managers' perceptions of magnitudes of specific parameters and as evaluative statements. The latter are useful for interpreting the percent estimates provided in the earlier section. For example, in measuring managers' beliefs about the consumers' between-store price-comparisons, managers estimated that, on average, 20% does so. While this appears to be a small number, the means for the likert data indicate that this corresponded to a perception of "a lot" of inter-store price comparison.

ANALYSES AND RESULTS

Simple statistics (means and frequencies) were computed for all of the variables; the results are presented in Tables 2-6. Correlations were also calculated for the percentage measures and the likert scales (Tables 7 and 8). Each of the following sections discusses the empirical evidence for various sets of managerial beliefs about consumer price awareness and price sensitivity that theoretically, should influence managers' pricing decisions in the retail grocery market.

CONSUMER PRICE SEARCH AND PRICE RESPONSIVENESS

Introduction

A key assumption of models of information economics is that the amount of consumer price search that takes place within imperfectly-competitive
markets is a critical input in the pricing decisions of sellers in these markets. According to these models (e.g., Stigler 1961; Rothschild 1974), price differences across stores arise because sellers take advantage of the lack of consumer price search. If there is a high level of price search by consumers, price dispersion will not be sustainable in equilibrium.

The present data examines to what extent managers hold beliefs consistent with such economic logic, i.e., beliefs about consumers' search for information about prices of different stores, about variation in price levels across stores and whether such consumer awareness is related to the price competitiveness of the market. Table 2 presents the average (percent) estimates of managers about their market, followed by the corresponding statistics for the likert scale data in Table 3.
TABLE 2: MANAGERS' MARKET BELIEFS AND CONSUMERS' REPORTS
ABOUT PRICE RESPONSIVENESS (PERCENTAGE DATA)

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Consumers (% of sample)</th>
<th>Managers' estimate</th>
<th>Variability σ</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare prices weekly</td>
<td>* 29.6</td>
<td>36.0</td>
<td>22.3</td>
<td>1 - 90</td>
</tr>
<tr>
<td>Compare prices monthly</td>
<td>* 12.3</td>
<td>18.6</td>
<td>10.4</td>
<td>0 - 60</td>
</tr>
<tr>
<td>Compare prices less often</td>
<td>21.3</td>
<td>23.4</td>
<td>16.7</td>
<td>0 - 70</td>
</tr>
<tr>
<td>Never compare prices</td>
<td>* 36.0</td>
<td>22.7</td>
<td>20.5</td>
<td>0 - 98</td>
</tr>
<tr>
<td>Shop one store always</td>
<td>29.0</td>
<td>39.1</td>
<td>18.0</td>
<td>0 - 80</td>
</tr>
<tr>
<td>Shop mostly one store</td>
<td>* 49.0</td>
<td>35.3</td>
<td>16.4</td>
<td>5 - 85</td>
</tr>
<tr>
<td>Shop two or more regularly</td>
<td>* 22.0</td>
<td>25.3</td>
<td>13.3</td>
<td>5 - 75</td>
</tr>
<tr>
<td>Shop stores' specials regularly</td>
<td>* 18.6</td>
<td>33.9</td>
<td>20.3</td>
<td>5 - 90</td>
</tr>
<tr>
<td>Buy larger quantity on special</td>
<td>67.3</td>
<td>42.8</td>
<td>22.1</td>
<td>0 -100</td>
</tr>
<tr>
<td>Talk to friends about specials</td>
<td>20.4</td>
<td>16.2</td>
<td>12.4</td>
<td>1 - 50</td>
</tr>
<tr>
<td>Scan shelves for specials</td>
<td>78.0</td>
<td>49.9</td>
<td>22.6</td>
<td>10 - 90</td>
</tr>
<tr>
<td>Read ads and fliers</td>
<td>78.0</td>
<td>61.7</td>
<td>21.2</td>
<td>3 - 98</td>
</tr>
<tr>
<td>Have a grocery budget</td>
<td>43.0</td>
<td>49.0</td>
<td>21.9</td>
<td>5 - 90</td>
</tr>
<tr>
<td>Use coupons</td>
<td>82.0</td>
<td>64.9</td>
<td>19.5</td>
<td>10 - 95</td>
</tr>
</tbody>
</table>

Note: (a) '*' indicates managers' overestimates of consumer price search.
TABLE 3: MANAGERS' AND CONSUMERS' MARKET BELIEFS (BELIEF STATEMENTS)

<table>
<thead>
<tr>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most consumers compare prices (0.69)²</td>
</tr>
<tr>
<td>Most consumers shop specials</td>
</tr>
<tr>
<td>Local grocery market very price competitive (0.82)</td>
</tr>
<tr>
<td>Cart prices vary between stores (0.92)</td>
</tr>
<tr>
<td>Item prices vary between stores</td>
</tr>
<tr>
<td>Price of meat and produce vary</td>
</tr>
<tr>
<td>Quality of meat and produce vary</td>
</tr>
<tr>
<td>Greater price search is associated with market price competitiveness (0.71)</td>
</tr>
<tr>
<td>With price competition, cart prices vary between stores (0.41)</td>
</tr>
<tr>
<td>With price competition, item prices vary between stores (0.64)</td>
</tr>
<tr>
<td>Higher advertising signals lower price</td>
</tr>
<tr>
<td>Higher advertising signals lower price on featured items</td>
</tr>
<tr>
<td>Stores with higher advertising have higher price on nonfeatured items</td>
</tr>
<tr>
<td>Higher advertising signals better quality meats and produce</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>σ</th>
<th>N</th>
<th>Mean</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most consumers compare prices (0.69)²</td>
<td>421</td>
<td>3.6</td>
<td>0.7</td>
<td>92</td>
<td>3.6</td>
<td>0.9</td>
</tr>
<tr>
<td>Most consumers shop specials</td>
<td>419</td>
<td>3.5</td>
<td>0.9</td>
<td>92</td>
<td>3.3</td>
<td>1.1</td>
</tr>
<tr>
<td>Local grocery market very price competitive (0.82)</td>
<td>421</td>
<td>3.9</td>
<td>0.6</td>
<td>92</td>
<td>4.3</td>
<td>0.</td>
</tr>
<tr>
<td>Cart prices vary between stores (0.92)</td>
<td>421</td>
<td>3.0a</td>
<td>0.9</td>
<td>92</td>
<td>3.1a</td>
<td>1.2</td>
</tr>
<tr>
<td>Item prices vary between stores</td>
<td>418</td>
<td>3.7</td>
<td>0.8</td>
<td>92</td>
<td>3.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Price of meat and produce vary</td>
<td>418</td>
<td>3.3</td>
<td>0.9</td>
<td>92</td>
<td>3.0a</td>
<td>1.0</td>
</tr>
<tr>
<td>Quality of meat and produce vary</td>
<td>420</td>
<td>3.6</td>
<td>0.9</td>
<td>92</td>
<td>4.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Greater price search is associated with market price competitiveness (0.71)</td>
<td>421</td>
<td>3.6</td>
<td>0.6</td>
<td>92</td>
<td>3.7</td>
<td>0.7</td>
</tr>
<tr>
<td>With price competition, cart prices vary between stores (0.41)</td>
<td>422</td>
<td>2.6</td>
<td>0.6</td>
<td>92</td>
<td>2.3</td>
<td>0.7</td>
</tr>
<tr>
<td>With price competition, item prices vary between stores (0.64)</td>
<td>421</td>
<td>3.4</td>
<td>0.7</td>
<td>92</td>
<td>2.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Higher advertising signals lower price</td>
<td>419</td>
<td>2.6</td>
<td>0.8</td>
<td>92</td>
<td>2.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Higher advertising signals lower price on featured items</td>
<td>420</td>
<td>3.7</td>
<td>0.8</td>
<td>92</td>
<td>3.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Stores with higher advertising have higher price on nonfeatured items</td>
<td>420</td>
<td>3.5</td>
<td>0.8</td>
<td>92</td>
<td>3.1a</td>
<td>0.9</td>
</tr>
<tr>
<td>Higher advertising signals better quality meats and produce</td>
<td>422</td>
<td>2.7</td>
<td>0.8</td>
<td>92</td>
<td>2.4</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Note: (1) 1=Strongly disagree; 3=Neither disagree nor agree; 5=Strongly agree.
(2) Coefficient alphas indicated in parenthesis beside multi-item scales.
(3) All means are significantly different from 3 at p=0.01 or lower, unless indicated by superscript a.
Perceived Frequency of Store Price Comparison

One index of managers' beliefs about consumers' between-store price-informedness is their estimate of how frequently consumers in their market compare store prices. Managers perceived a high degree of such price-information updating: 55% of consumers were estimated to update their store price-knowledge at least on a monthly basis (36% weekly, 19% monthly). Correspondingly, only a small proportion (23%) were considered price-insensitive, i.e., those who do no price comparison at all. A second measure focused on the number of stores shopped by consumers on a regular basis. Again, about one fifth of the market was considered to consist of active shoppers (22%). Managers did, however, perceive a fairly large segment of the market to be store-loyal (39%) or "mostly store loyal with occasional shopping between stores" (35%).

These beliefs are also addressed by the responses to the likert scales (1=strongly disagree, 5=strongly agree). As seen in Table 3, managers perceived that "most" consumers compare prices (mean: 3.6) and shop for specials (mean: 3.3). Moreover, they characterized the local market as very price competitive (mean: 4.3). They perceived little difference in the overall prices of stores (mean: 3.1), whereas they did believe that there would be some variation in the prices of individual items (mean: 3.7). Further, the quality of meats and produce was thought to vary a lot between stores (mean: 4.0).

Both managers (mean: 3.7) and consumers (mean: 3.6) agreed that between-store price search by consumers increases the price competitiveness of the
market. Moreover, they believed that in such a market, there would not be much variance in the price of a whole basket ("cart") of items (mean: 2.3)\(^{19}\). As seen in Table 3, there is little difference between managers' and consumers' responses to the likert measures. One significant difference (p=0.0001) was in their beliefs about whether item prices would vary in a price competitive market. Managers believed, on average, that there would not be great differences in item prices (mean: 2.7) whereas consumers felt that item price variation would persist under conditions of high price competition (mean: 3.4).

**Perceived Responsiveness to Price Specials**

The price of specific items in hilo supermarkets changes almost weekly because of the frequent use of price 'specials' intended to create a low price image for the store and increase store traffic (Supermarket Merchandising 1959; Progressive Grocer 1965). To draw consumers to the store, these deals are advertised heavily in fliers and newspapers. Thus, an important reflection of consumers' sensitivity to between-store price dispersion lies in their responsiveness to the price specials offered by different stores. Since this continues to be an important tactic in this industry (Cox and Cox 1990), the questionnaire assessed managers' beliefs about consumer responsiveness to such tactics.

\(^{19}\) Note that this general belief is inconsistent with managers' responses on item-price variation in their local markets, which they characterized as being very competitive.
It is seen (Table 2) that managers believed that a full third of consumers (34%) regularly shop price specials offered by different stores. They perceived that a significant amount of price search takes place within the store as well: they estimated that 50% of consumers "scan shelves to see if items are on special." In addition, according to managers, an equally large proportion of the market (43%) increase the volume of their usual purchases of an item when it is on sale. Nearly two-thirds of the market (62%) were generally believed to read store ads and fliers. The estimates of consumer attention to fliers of each specific store were similarly high, with the lowest estimate being 32% for those of firm D. Managers also estimated that about 50% of consumers have a weekly budget for their groceries and that 65% use coupons.

Comparison of Manager and Consumer Responses

An issue to be considered, then, is whether these market beliefs about consumer behavior are consistent with actual consumer behavior, i.e., whether these beliefs are "accurate." Although they cannot be regarded as an objective criterion of "accuracy," consumer self-reports in the present study afford an opportunity to address this issue. Managers' beliefs about consumer price responsiveness were compared against self-reports of consumers for each variable (see Table 2).

At first glance, managers appeared not to "overestimate" consumer price responsiveness. Managers, in fact, believed a larger proportion of the market

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20 Recall that firm D uses an EDLP strategy.
to be store-loyal than reported by consumers (39% versus 29%), with a corresponding opposite result for their estimates of those who regularly shop more than one store (51% versus 71%). Similarly, managers appeared to underestimate the use of coupons (65% versus 82%) and attention to ads and fliers (62% versus 78%). It is noteworthy that this estimate from the consumer data is consistent with that reported in earlier research. Lynn (1981) found that about 60% of consumers identified ads and fliers as their most important source of price information.

A different pattern of results is obtained when the direct measures of price-information search and between-store shopping for specials are examined. Managers pegged the proportion of consumers who update price-knowledge at least monthly to be substantially higher than consumers report (55% versus 42%) This is due to managers' overestimation of weekly price comparison activity and underestimation of the segment that never compares prices. Similarly, managers perceived a much larger proportion of the market to engage in regular between-store shopping of specials than is seen in the consumer data (34% versus 19%). Correspondingly, their average estimates of within-store search were relatively much lower (50% versus 78.0%) as were the estimates of the segment that purchases larger-than-usual quantities when an item is on "special" (43% versus 67%).

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21 This measure may be inflated for consumers; any nonzero response was coded as 'coupon usage' for consumers, whereas managers' estimates may be of frequent (or sizeable) coupon users.
Discussion

Overall, the results presented in this section suggest that managers have beliefs about the relevant parameters identified in information economic theory (consumer price search). Managers believe their consumers to be highly aware of prices and sensitive to difference in prices, over time and across stores. This is manifested in managers' estimates that a significant proportion of their market updates price knowledge frequently, shops specials of different stores ("cherry-pick") regularly and pays attention to retail price advertisements. Correspondingly, they consider their local market to be highly-price competitive with stores having similar overall price levels. The covariation belief data also suggest that a majority of managers subscribe to the economic logic that greater price-informedness of consumers increases market price-competitiveness, thereby reducing the variation in overall prices across stores. The belief of managers (affiliated with highly price-reactive firms) that consumers are very responsive to pricing tactics such as specials also supports the theoretic assumption that such market "knowledge" influences the price decisions of the firm.

The comparison of manager and consumer responses reveals that managers overestimated the degree of consumer awareness of and responsiveness to between-store price differentials - whether they update price knowledge frequently and shop the specials of different stores (cf. Urbany, Dickson and Key 1990). Thus, these findings echo the results of previous research in this industry that decision-makers' perceptions of demand elasticity may be higher than warranted by
actual market conditions. For instance, in an analysis of grocery scanner data, Little and Shapiro (1980) found that, given the price sensitivity of the market, prevalent prices were lower than the optimal level. Other researchers (Boynton et al. 1983; Dickson and Urbany 1991) have also documented the high degree of competitive price reactivity in the grocery industry. They suggest that pricing decisions may be influenced more by managers' beliefs about market responsiveness than by consumers' sensitivity to competitive price-cuts.

The data also speak to the role of price specials as a competitive strategy. When an item is discounted, the resulting increase in sales may be derived from two sources: increased store traffic due to an influx of new shoppers who have become aware of the lower prices, and purchasing in larger quantities by the store's current shoppers. Previous research has indicated that much of the increased sales following price specials is due to "stocking up" by the store's own consumers rather than due to an influx of new consumers (Blattberg et al. 1981). Although the profitability of such 'specialling' strategies may be affected by additional factors such as demand interrelationships across different categories of products (Mulhern and Leone 1991), managers' subjective evaluations about the effectiveness of these tactics need to be based on a consideration of both sources of sales increases.

Regression analysis indicates that this is, in fact, the case. The perception of the increased sales of items on special was significantly affected by both perceived levels of between-store shopping ($\beta=0.25, p=0.02$) and by in-store scanning of shelves for specials ($\beta=0.31, p=0.002$). Nevertheless, managers'
underestimation of within-store search by their store's own customers together with overestimation of between-store shopping of specials (i.e., perceived increase in new store traffic) suggest a bias which may result in incorrect attributions about the effectiveness of specials. This may then form the basis for the continued reliance on such tactics at the expense of other price (e.g., couponing) and non-price tactics. For example, the observed tendency of grocery firms to match competitors' price specials immediately for certain items (Dickson and Urbany 1991) presumes a high level of consumer responsiveness to specials. If this is an overestimation of the actual price sensitivity (cf. Little and Shapiro 1980), the resulting competition will be too high leading to price levels that are too low.

DETERMINANTS OF STORE CHOICE AND STORE PRICE IMAGE

Introduction

Another aspect of managers' beliefs about consumer price awareness lies in their perceptions about consumers' price-image of different stores. The price-image of the firm is considered particularly important (e.g., Progressive Grocer 1965) for advocating the adoption of price matching as a competitive response. The inclusion of measures in the questionnaire which examine managers' perceptions about each firm's market positioning takes on added importance because of the intense competition and frequent price wars witnessed in the retail grocery industry. Grocery retailers have been attempting to position their stores along nonprice
dimensions in addition to the traditional price emphasis (Progressive Grocer 1987, 1990). This trend is seen in the market under study as well. Over the past few years, firm B has been attempting to position itself more strongly on quality and service dimensions, while maintaining its price competitiveness through tactics such as double couponing and frequent price specials. Firm A relies more heavily on price positioning, using similar price tactics. Firms C and D use an everyday low price ("EDLP") strategy rather than price markdowns ("Hilo" pricing); in addition, C is a general merchandiser.

Reasons for Shopping at Different Stores

The questionnaire required managers to provide three reasons why their consumers shopped at each chain. These perceived determinants of store choice were classified into four categories: location, price (overall price level, price specials and coupons), quality (produce quality and general quality) and "other" (service, layout, selection). Statistics were computed for the overall data (all three reasons aggregated for each respondent) and separately for first reason provided. The latter analysis presumes that the first reason listed for each firm is the most important determinant. In addition, this analysis is necessary to facilitate comparison with consumer data. This is because few consumers (68%) listed a second item, and even fewer (25%) listed a third. Hence, the consumer analysis can be done on only the first reason provided, which is then compared to the first reason listed by managers.
The results of the overall analysis is presented in Table 4. Considering all three reasons, the first column (the whole manager sample) indicates that location was perceived to be the most important reason for consumer patronage of Firm A stores (27.3%), followed by price (25.4%) and quality (8.7%). For firm B, while location was again ranked the most important (20.4%), the perceived importance of price and quality were reversed. More managers perceived B to have quality (24.3%) rather than price (10.6%) appeal\textsuperscript{22}. Thus managers hold distinct beliefs about consumer motivations for shopping different stores. This pattern of responses is seen even more clearly when only the first reason is considered.

\textsuperscript{22} Not surprisingly, price was regarded by a much higher percentage as the reason for consumer patronage of the EDLP stores C (38.2%) and D (57.2%). This is echoed strongly in the consumer self-reports (57.5% and 82.5% respectively).
<table>
<thead>
<tr>
<th>REASONS FOR SHOPPING</th>
<th>FIRM A POSITIONING</th>
<th>FIRM B POSITIONING</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL (%)</td>
<td>MANAGERS</td>
<td>OVERALL (%)</td>
</tr>
<tr>
<td>Location</td>
<td>27.3</td>
<td>29.1</td>
</tr>
<tr>
<td>Price</td>
<td>25.4</td>
<td>19.8</td>
</tr>
<tr>
<td>Quality</td>
<td>8.7</td>
<td>10.6</td>
</tr>
<tr>
<td>Other</td>
<td>37.4</td>
<td>40.4</td>
</tr>
</tbody>
</table>

**FIRST REASON**

<table>
<thead>
<tr>
<th>REASONS FOR SHOPPING</th>
<th>FIRM A POSITIONING</th>
<th>FIRM B POSITIONING</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL (%)</td>
<td>MANAGERS</td>
<td>CONSUMER</td>
</tr>
<tr>
<td>Location</td>
<td>55.4</td>
<td>59.6</td>
</tr>
<tr>
<td>Price</td>
<td>14.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Quality</td>
<td>4.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Other</td>
<td>26.1</td>
<td>31.9</td>
</tr>
</tbody>
</table>
Comparison of Manager and Consumer Responses

Table 4 (first reason) also presents consumers' self-reports about their first reason for shopping at each store\textsuperscript{23}. Location was the most important factor, but for more shoppers of firm B than of firm A (57.9\% versus 47.8\%). Although price was mentioned by a larger proportion of consumers for firm A than for firm B (24.3\% versus 12.5\%), nonprice factors other than location were reported to be equally important for both firms (26.8\% and 29.6\%).

Each store has a distinctive image in the minds of consumers and managers. A comparison of managers' and shoppers' responses reveals interesting differences in perceptions of store image. Since consumers provided a reason for shopping at their primary store, their responses are compared to individual firm's estimates rather than to overall manager estimates (see Table 4). Firm A managers emphasized the role of location (59.6\%) and service (31.9\%) factors as determinant attributes for their own stores. Shoppers of firm A did indicate the role of location and service (47.8\% and 17.9\% respectively); however, 24.3\% of consumers mentioned price as the primary reason, in contrast to only 4.4\% of managers.

Overall, firm A managers evaluated the relative importance of various factors in a consistent manner for both firms. Firm B managers, however, considered quality to be more important than even location when evaluating their own stores, compared to those of their major competitor. These perceptions

\textsuperscript{23} Consumers indicated their primary store and provided up to 3 reasons for shopping at that store; the present analysis reports on only the first reason.
however, are not consistent with consumer responses. More firm B shoppers mentioned location as a primary determinant than did firm A shoppers; moreover, equal proportions of firm B (9.2%) and firm A (8.9%) shoppers mentioned quality as a primary factor in store choice.

Discussion

Prior research has identified locational convenience and low prices, followed by quality and service factors, as the most important attributes that affect retail grocery patronage (e.g., Tigert and Arnold 1981; Arnold, Oum and Tigert 1983). This pattern is found in the present data, although the importance of each factor varies according to the unique positioning of each store in the minds of consumers and managers. Managers are seen to have distinct beliefs about consumers' perceptions about their price-image. Further, these beliefs are not entirely consistent with their customers' perceptions.

The Likert data indicate that firm B managers perceived no difference in overall prices between the different stores; however, their beliefs about store positioning show that they believed firm A had a lower price image (price was listed as the primary reason for firm B by a mere 1.1% of the overall manager sample). Firm B managers perceived price to be as effective as quality in attracting consumers to firm A, but not to itself. Managers' price image of each store may lead to the choice of associated pricing and promotional tactics (such as frequent use of price discounts and price advertising, relative to service or quality emphases).
At the time of the study, firm A's positioning strategy consisted of a predominantly 'lower price' theme created by heavy price advertising, while firm B focused more on service, selection and quality than on price. Given the historic importance of price in this industry, this difference in perceptions may reflect firm B managers' concern that they have been emphasizing price less than A. It may also be feared that B's emphasis on quality and service themes have fostered an image of higher prices among consumers. Although this discussion is speculative, it is interesting to note that in the year following the study, firm B initiated an advertising campaign emphasizing the competitiveness of its prices in addition to its quality.

Attribute determinacy has been shown to vary temporally depending on the market situation. For instance, Arnold, Oum and Tigert (1983) found that low price-level was as important as location in one market when price competition was intense. However, weekly price specials replaced overall price level as the most determinant attribute in store choice in later years as overall price differences across firms narrowed. While the present study of this competitive market cannot speak to the temporal dimension of attribute determinacy, it does suggest that managers' perceptions about price image may be influenced by each firm's positioning strategy and the price competition in the market at the time.
ITEMS USED IN BETWEEN-STORE PRICE COMPARISON

"Visible" Items

Another dimension of managers' beliefs about consumer price informedness is reflected in their selection of items for special price discounts and other promotional attention. The practice of relying on price-discounting and advertising of specific items to create the impression of overall store savings has been prevalent in the retail grocery industry for decades (Cox and Cox 1990). Of particular importance for a multi-product retailer is the prevalent belief that certain items are 'price exemplars' whose prices influence consumers' price-image of the entire store (e.g., Holdren 1960; Gabor 1977; Buyukkurt 1983; Davidson et al. 1988).

Accordingly, respondents in the present sample were asked to list three items used most often by consumers to compare prices between stores. A comparison of managers' and consumers' responses across all three items is not possible because 58% of consumer responses across all three items were blank compared to 1.8% for managers. Therefore, in Table 5, consumer statistics are presented for only the first item, whereas for managers, the corresponding analysis is also done separately for all items.

Most managers rated milk, meats, soda and produce as the items most frequently used by consumers in price comparisons of different stores. This is consistent with findings in other studies (e.g., Cox and Cox 1990) and with the
general ranking obtained from the consumer data. It is instructive, however, to examine the differences in magnitudes between the two sub-samples. For example, the two items receiving 55% of the first item vote by managers are milk and soda. Turning to the consumer data, even taking only the percentage of those who responded to this question (column 2), these two items are mentioned by only 14%. For the whole consumer sample (column 1), it is only 8%. Moreover, items like cereal, laundry detergent and canned foods received a similar number of mentions from consumers but were absent or negligible in managers' estimates. The distribution is wider for consumers, i.e., the proportion of consumers listing each item is far lower than that of managers, in most cases.
### TABLE 5: ITEMS USED IN PRICE COMPARISON OF STORES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONSUMERS (% of sample)</th>
<th>CONSUMERS (% of response)</th>
<th>MANAGERS: ONE ITEM (% of sample)</th>
<th>MANAGERS: THREE ITEMS (% of sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce</td>
<td>10.2</td>
<td>18.0</td>
<td>10.8</td>
<td>17.1</td>
</tr>
<tr>
<td>Meats</td>
<td>12.3</td>
<td>21.8</td>
<td>18.5</td>
<td>22.5</td>
</tr>
<tr>
<td>Milk</td>
<td>5.0</td>
<td>8.8</td>
<td>34.8</td>
<td>22.9</td>
</tr>
<tr>
<td>Eggs</td>
<td>0.5</td>
<td>-</td>
<td>-</td>
<td>1.8</td>
</tr>
<tr>
<td>Dairy</td>
<td>0.9</td>
<td>-</td>
<td>2.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Cereal</td>
<td>3.8</td>
<td>6.7</td>
<td>-</td>
<td>1.1</td>
</tr>
<tr>
<td>Bread</td>
<td>1.2</td>
<td>2.1</td>
<td>3.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Canned Food</td>
<td>4.0</td>
<td>7.1</td>
<td>1.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Coffee</td>
<td>2.4</td>
<td>4.2</td>
<td>-</td>
<td>1.1</td>
</tr>
<tr>
<td>Soda</td>
<td>3.1</td>
<td>5.4</td>
<td>22.8</td>
<td>14.9</td>
</tr>
<tr>
<td>Laundry Soap</td>
<td>3.1</td>
<td>5.4</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Other</td>
<td>10.2</td>
<td>18.0</td>
<td>8.8</td>
<td>4.4</td>
</tr>
<tr>
<td>MISSING</td>
<td>43.4</td>
<td></td>
<td>1.1</td>
<td>1.8</td>
</tr>
</tbody>
</table>

24 The statistics for the consumer responses are based only on the first item mentioned by consumers. The percentages in the first column are based on the entire sample; the second column excludes the missing responses (it lists the frequency for each item as a percentage of only those who responded to the question).
The responses of managers in both firms were very similar (considering all three items):

### TABLE 6

**FIRM A AND FIRM B MANAGERS' ESTIMATES OF VISIBLE ITEMS**

<table>
<thead>
<tr>
<th>Store</th>
<th>Produce</th>
<th>Meat</th>
<th>Milk</th>
<th>Cereal Foods</th>
<th>Canned</th>
<th>Soda</th>
<th>Laundry Detergent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm A</td>
<td>23.6%</td>
<td>23.6%</td>
<td>25.7%</td>
<td>1.4%</td>
<td>2.9%</td>
<td>16.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Firm B</td>
<td>20.7%</td>
<td>21.5%</td>
<td>20.0%</td>
<td>0.7%</td>
<td>0.7%</td>
<td>13.3%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

**Discussion**

Much retail advertising is devoted to price lists of a few items (Cox and Cox 1990). In the grocery industry, the items featured in these ads usually include those that are purchased frequently or otherwise have economic or psychological significance for consumers. Managers in the present sample believe that certain items are used by consumers in making price-comparisons. The difference in nonresponse between managers and consumers for this measure is interesting. It must be noted that 43.4% of consumers left even the first item blank (the corresponding statistic for the second and third items were 57.1% and 73.5%, respectively). This finding suggests that while managers have clear beliefs about which items consumers use in price comparisons, the attribution of such 'visibility' to specific items appears to be limited or nonexistent among consumers themselves.
Although discounting such "visible" items is a commonly-practised tactic, it cannot be assumed to be automatically effective. Cox and Cox (1990) note that the effectiveness of retail price ads in creating an impression of lower store prices "does not consistently occur" (p. 441). In their study, these ads created an impression of greater store savings only for unbranded products that were frequently purchased (bananas, chicken, bread, cola and milk). The opposite effect was found when the featured items were national brands, presumably because of the quality/premium image associated with the latter. To the extent that such (possibly inaccurate) beliefs form the basis for pricing and advertising strategy, it may result in the formation and persistence of decision heuristics that may not always be appropriate (Preston 1963; Dickson and Urbany 1991).

RELATIONSHIP BETWEEN ADVERTISING LEVELS AND PRICE PERCEPTIONS

A final set of (likert) measures examined respondents' perceptions about the relationship between advertising levels and store prices and quality. Advertisements are relied on heavily in the grocery industry to communicate the prices of specific items and to convey a general low price image for the store (cf. Cox and Cox 1990). Such a reliance on price advertising presumes some minimum level of responsiveness to advertising. Theoretically, advertising has an important role in pricing decisions in imperfectly-competitive markets. For example, Stigler (1961) emphasized the role of price advertising by manufacturers to increase consumer price knowledge and thereby reduce search costs. Signalling models
further postulate that advertising levels signal quality of 'experience' goods\textsuperscript{25} in markets with imperfect information (Nelson 1974). The level of advertising functions as information about the high quality seller which helps to reduce uncertainty for the consumer (also Schmalensee 1978). While the latter are models of product-rather than store-choice, these implications are examined in the present study. An important issue is whether prevalent managerial beliefs about the effectiveness of price-advertisements in creating a low store price-image among consumers in their market affect tactical decisions.

Although consumers in our sample did report a high level of attention to ads and fliers, the belief scale responses indicate that neither managers (mean:2.2) nor consumers (mean:2.6) perceived that stores which advertise intensively have lower prices. Similarly, the quality of meats and produce was not seen to be associated with advertising levels by managers (mean: 2.4) or consumers (mean: 2.7). Managers agreed that items featured in retail price ads were priced lower (mean: 3.8) but were "undecided" on the price-levels of nonfeatured items. There was, however, a significant correlation (0.20) between these two items for managers (there were no differences in the responses of firm A and firm B managers).

Cox and Cox (1990) point out that stores that do not use price specials (EDLP firms) make a point of informing consumers that nonfeatured items are

\textsuperscript{25} For these goods, quality cannot be determined a priori, but only after consumption.
frequently priced higher by their competitors. It is interesting to note that consumers did display such market sophistication. They believed that featured items have lower prices (mean: 3.7) but that nonfeatured items are priced higher (mean: 3.5). Overall, these results question whether advertising of select items creates a perception of overall lower prices for specific stores (cf. Cox and Cox 1990).

LIMITATIONS

The data were obtained from only two of the firms in the local market, both of which follow promotional pricing policies. Caution should be exercised in generalizing these results as representative of the grocery decision-maker because market beliefs of managers in firms which engage in everyday-low pricing may be different.\(^{26}\)

The measures used in the questionnaire need to be refined and validated. Many of the measures may be improved on, reflecting the exploratory nature of the research. Similarly, several of the likert scales are weak as evidenced in the low coefficient alphas (see Table 3). The percent responses have extremely high variance. It is unclear to what degree the legitimacy of the analyses is jeopardized by this variance which may be due to measurement error as well as to managers' lack of knowledge about the market environment.

\(^{26}\) But see Chapter VII: no differences were found between EDLP firms and promotional pricing firms.
In analyzing the differences between managers and consumers, managers' average estimates were compared against the reported frequency of consumers engaging in the relevant search behaviors. Without an objective standard of accuracy, the discrepancies between managers' estimates and consumer frequency probably reflect consumers' flawed reports as well as managers' inaccurate beliefs. Nevertheless, it represents an important initial attempt to conduct research that is able to compare managerial cognitions against a reasonable yardstick as emphasized by organizational researchers (Walsh 1990). Moreover, the consistency of the key findings about managers' perceptions of market price-responsiveness with previous research (e.g., Little and Shapiro 1980; Urbany et al. 1990) lends credibility to the current interpretation. It thus provides an important initial empirical and conceptual basis for understanding the "market beliefs" construct and its role in decision-making as discussed below.

GENERAL DISCUSSION: MANAGERS' MARKET BELIEFS

VARIATION IN MARKET BELIEFS

Introduction

Since a major goal of the present stream of research is to obtain a better understanding about the nature of market beliefs and their implications for decision-making, it is important to examine not only what these beliefs are but also
the strength and confidence with which these are held by managers. Unfortunately, no confidence measures were obtained in the present study. Nevertheless, it is instructive to examine the variation in managers' responses between firms and within each firm, to understand the uncertainty surrounding managers' market beliefs.

Differences in Beliefs Between Firms

Few differences were found between the responses of managers of firms A and B across the different sets of measures. The key difference appeared to be that firm B managers perceived higher consumer price responsiveness than firm A; they perceived lower store-loyalty than firm A (30% versus 40%, p=0.0001) and greater consumer attention to fliers, both generally (67% versus 57%, p=0.0001) and for store-specific fliers. This is also echoed in the likert responses both for perceived store price comparisons by local consumers (mean: 3.8 versus 3.4, p=0.06) and about shopping for specials (mean: 3.6 versus 3.1, p=0.02).

As noted earlier, firm B managers perceived their stores to be less attractive to price-conscious customers, in terms of price-image. The data reveal a systematic bias such that managers down-played the importance of price and exaggerated that of quality and service factors in assessing the image of their own stores. In evaluating the reasons for consumer patronage of firm A, while all managers acknowledged the role of location as a determinant factor, a higher proportion of firm A managers listed general store quality factors (quality and
'other') rather than price (36.2% versus 4.3%). Firm B managers, on the other hand, placed equal importance on both types of reasons for consumers' choice of store A. For firm B, while all respondents considered price to be relatively unimportant as a primary factor, firm B managers emphasized the importance of quality as a determinant attribute over location (32% versus 25%); the comparable estimates from firm A managers were 6% and 53%. The conclusion that store affiliation introduced a bias is further supported by the finding that there were no differences between firm A and firm B managers in their assessment of the determinant attributes of firms C and D.

Differences in Beliefs Within Firm

Since there were no differences between firms for the majority of responses, this section examines the overall data. The analysis does indicate that some specific beliefs are held confidently. For example, the open-ended categorical responses of which items are used by consumers in store price comparison are narrowly distributed, suggesting the prevalence of a strongly-held market belief.

For the percent estimates, however, the analyses reveal extremely high variation, even among managers belonging to the same organization. While it is admittedly unreasonable to expect a high degree of precision in open-ended estimates, the magnitude of the standard deviations is intriguing since they question the legitimacy of the mean estimates discussed above (see Table 2 for the standard deviations and range for each measure). For example, on the key measure of the
proportion of consumers who shop store's specials regularly, the average estimate was 33.9%; the standard deviation was 20.3, with a range from 5-90%. A similar imprecision characterizes the critical estimates of consumers shopping two or more stores regularly (5-75%) and of those who compare prices weekly (1-90%). In fact, it is clear from Table 2 that all of the responses reflect an extremely high level of uncertainty. Managers appear to have no idea of the magnitudes of the relevant parameters, although they are more confident of the direction, i.e., managers within a firm believe that their consumers are "highly" price sensitive but do not know how to calibrate this belief quantitatively.

**Differences Between Staff and Line Managers**

It may be argued that it is not necessary for all firm personnel to have a precise understanding of the market, and that "inaccuracies" matter only if they are evidenced by actual decision-makers. Our sample included both store managers and staff decision makers making it possible to investigate the differences in market beliefs of between these managers. If decision-makers have a better understanding of the market, this should be reflected in greater 'accuracy' of staff decision-makers over store managers.

Few differences were found in the responses of these two subgroups across most measures. With respect to reasons for consumer patronage of firm A, the only difference observed between staff and store managers was in the emphasis placed on location; store managers' estimates (47.4%) of the importance of location
were closer to that of consumers (47.8%) than that of headquarters staff (68.6%). Also, more store managers (39%) than staff (17%) were aware of the importance of quality and service factors as determinant attributes for firm A. For price awareness variables, it was found that staff decision-makers provided a lower estimate of coupon usage than did store managers (60% versus 68%, p=0.06). Recall that overall, managers underestimated consumers' coupon usage by a significant amount. Similarly, staff respondents estimated lower attention to ads and fliers than did store managers, both overall and with respect to the ads and fliers of specific stores (53.3% versus 66.8%, p=0.0001). The only difference in the likert measures was that staff agreed that overall prices vary across stores whereas store managers (and consumers) did not (3.5 versus 2.8, p=0.001).

Although the number of significant differences is small, the pattern of differences implies that decision-makers' beliefs were more discrepant from consumers than those of store managers. Since store managers are boundary personnel and as such, direct observers of consumer behavior, this is perhaps not very surprising. What is disturbing is that it appears that such information is not being channelled to the headquarters staff. The latter may make decisions based on beliefs that are inconsistent with the reality of the market environment.

BELIEF STRUCTURE

While the issue of managerial belief structures is complex (Walsh 1990), the present data permit an initial assessment of whether and how relevant
market beliefs fit together in managers' understanding of their markets. Managers' market beliefs comprise perceived magnitudes of relevant parameters and the relationship between variables in the market environment. The correlations among these beliefs are presented for the percentage data (Table 7) and for the belief-scale data (Table 8).

It is seen that the magnitude of the correlations lie between 0.15-0.50. Although most are fairly low, a closer examination of the significant correlations provides reassurance. The responses reflect a consistent representation of their market, particularly with respect to beliefs about consumers' price awareness and price sensitivity. For example, in Table 7, it is seen that managers' belief about consumers' regular shopping at more than two stores is positively and strongly associated with perceived between-store shopping of specials (r=0.54) and with frequent updating of store price-knowledge (r=0.30). Similarly, regular specials shopping is related positively to purchase of larger amounts on special (r=0.28) and weekly updating of store price-knowledge (r=0.28). Weekly budgeting was strongly and positively associated with coupon usage (r=0.29) and attention to ads and fliers (r=0.32) as well as to greater within-store search (r=0.31). Coupon usage was related to budgeting activity (r=0.29) and to attention paid to ads and fliers (r=0.43). It is interesting that the beliefs about consumers' attention to ads and fliers were not related to perceived shopping for specials while it was related to perceptions of within-store search (r=0.23).

27 The nonsignificant estimates are not discussed here.
<table>
<thead>
<tr>
<th>VARIABLE NAME</th>
<th>Shops 2 or more</th>
<th>Shops specials</th>
<th>In-store search</th>
<th>Buys more on special</th>
<th>Weekly Budget</th>
<th>Uses Coupons</th>
<th>Reads fliers</th>
<th>Weekly updating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shops 2 or more stores</td>
<td>1.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shops specials</td>
<td>0.54</td>
<td>1.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-store search</td>
<td>-0.04</td>
<td>0.18</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buys more on special</td>
<td>0.15</td>
<td>0.28</td>
<td>0.36</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly budget</td>
<td>-0.05</td>
<td>0.07</td>
<td>0.31</td>
<td>0.07</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses coupons</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.15</td>
<td>0.16</td>
<td>0.29</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reads ads &amp; fliers</td>
<td>0.06</td>
<td>0.09</td>
<td>0.23</td>
<td>0.27</td>
<td>0.32</td>
<td>0.43</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Weekly updating</td>
<td>0.30</td>
<td>0.28</td>
<td>0.14</td>
<td>0.17</td>
<td>0.17</td>
<td>0.30</td>
<td>0.31</td>
<td>1.00</td>
</tr>
</tbody>
</table>
The correlations between the likert scale responses are presented in Table 8. It reveals a similar pattern as in the previous table, although weaker and less consistent. It is difficult to assess the degree to which this is due to a lack of clarity in perceived relationships in the market environment (the information economic logic) versus problems in the measures (see "limitations"). Nevertheless, it is clear that managers share the basic belief that greater price informedness increases market price competitiveness. What is less clear is managers' understanding of how individual item prices and overall stores prices and quality vary in such competitive markets.
### TABLE 8: CORRELATIONS BETWEEN MANAGERS' BELIEFS: LIKERT SCALES

<table>
<thead>
<tr>
<th>VARIABLE NAME</th>
<th>Compare prices</th>
<th>Shop specials</th>
<th>Local market very competitive</th>
<th>Cart prices vary</th>
<th>Item prices vary</th>
<th>Price of meat &amp; produce vary</th>
<th>Quality of meat &amp; produce vary</th>
<th>Search leads to competition</th>
<th>With competition</th>
<th>With competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers compare prices</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumers shop specials</td>
<td>0.38</td>
<td></td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local market very competitive</td>
<td>0.20</td>
<td>0.18</td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store cart prices vary a lot</td>
<td>-0.05</td>
<td>0.05</td>
<td>-0.13</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store item prices vary a lot</td>
<td>0.13</td>
<td></td>
<td>0.15</td>
<td>0.14</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price of meat and produce vary</td>
<td>0.03</td>
<td>0.12</td>
<td>0.15</td>
<td>0.24</td>
<td>0.14</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of meat &amp; produce vary</td>
<td>0.04</td>
<td>0.12</td>
<td>0.38</td>
<td>-0.30</td>
<td>-0.03</td>
<td>0.15</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search leads to competition</td>
<td>0.19</td>
<td>0.03</td>
<td>0.19</td>
<td>0.04</td>
<td>0.12</td>
<td>0.12</td>
<td>-0.09</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cart prices vary with competition</td>
<td>-0.09</td>
<td>0.13</td>
<td>-0.05</td>
<td>0.24</td>
<td>-0.08</td>
<td>0.05</td>
<td>0.10</td>
<td>-0.56</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Item prices vary with competition</td>
<td>0.12</td>
<td>0.11</td>
<td>0.24</td>
<td>0.07</td>
<td>0.19</td>
<td>0.20</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.04</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note: 'a' indicates that the correlation is significant at p=0.10 or better.*
CONCLUSION

The findings from this phase of the dissertation research suggest a linkage of market beliefs in a knowledge structure. The results of this study and the effects of this knowledge structure are of theoretical and practical importance. The study represents an early conceptual examination of the market beliefs construct. It provides much-needed empirical data on managers' market beliefs and thus, a stepping-stone to building better descriptive models of managerial decision-making.

The findings support the importance accorded certain market parameters in pricing decisions in an information-theoretic framework. From a descriptive point of view, however, the results question the automatic and correct responsiveness of decisions to changes in the levels of these parameters as implied in traditional marketing models. The discrepancies between managers' beliefs and the market environment and the uncertainty within the firm and the relative discrepancies in actual decision-makers' beliefs compared with consumer reports suggest that decisions based on market beliefs may be far from optimal or even satisfactory. The variation in beliefs to the extent observed in this study also raises important questions about the extent to which a 'firm' acts on a clear, coherent understanding of consumer behavior. Rather than viewing this as undermining the importance of market beliefs, it is suggested that it underscores the importance of further research into the use of such beliefs in decision-making.

The next phase of the dissertation research studies the effects of market beliefs on decision-making in greater detail. Specifically, it examines
whether belief-based decision-making is responsive to new, relevant market research information, particularly market information that contradicts existing market beliefs. This issue is studied in the context of a specific set of confidently-held beliefs identified from the data presented here and from prior research (e.g., Dickson and Urbany 1991; Cox and Cox 1990). If belief-discrepant information is not considered sufficiently in decision-making, resulting decisions on advertising (extensive ads featuring these items and their prices) and pricing (matching competitive price cuts for these items) may not be optimal. Moreover, to the extent that these beliefs are held with confidence and are pervasive across firms, available market information may be ignored if it is belief-discrepant leading to a persistence of these beliefs and corresponding decision practices, even in competitive markets. This issue is investigated in the experimental research described in the following chapters.
EXPERIMENTAL STUDY OF MARKET BELIEFS AND INFORMATION USE:

METHODOLOGY

INTRODUCTION

This chapter describes the research setting and the methodology used to investigate the effect of market beliefs on routine pricing decisions in the retail grocery industry, with respect to the evaluation and use of market information. This industry provides an appropriate decision context for the present study in terms of decision and information-environment characteristics (see Chapter II; cf. Holdren 1960; Preston 1963). The present chapter identifies a dominant pricing decision heuristic in this industry, and delineates the market beliefs which (should) underlie this practice.

THE "VISIBLE-ITEM" PRICING HEURISTIC

A common rule-of-thumb used by supermarket pricing managers in deciding weekly prices for a large array of items is to apply a standard markup over cost, with mark-ups varying across different categories of items (e.g., Preston 1963;
Nagle and Novak 1988; Cox and Cox 1990). Certain items are priced with especially low markups; these items are priced very competitively (in many cases, below cost) and advertised heavily.

What are these items? These items (variously termed "visible items," "price exemplars" or "loss leaders"), usually include items that are frequently purchased by the consumer (e.g., fresh produce, meat, milk), or nationally-advertised brands. Consumers are assumed to be more familiar with the price of these items than with that of less-frequently purchased products, which affects their impression about the overall price-image of the store (see Appendix C). Since purchases of these items constitute a significant proportion of the monthly/annual grocery budget, and since it is assumed that consumers have higher price awareness for these products, managers consider it important that consumers obtain these at competitive prices. The importance attributed to the prices of these items has been documented over many decades in trade and academic articles, in terms of their presumed influence on consumer price awareness (e.g., Supermarket Merchandising 1959; Progressive Grocer 1964) and generation of new store traffic28 (Farm Index 1970; Gray and Anderson 1962).

Since specific items are believed to be visible to the consumer, the corresponding pricing tactic is to minimize competitive price-differentials on these items, compared to less visible items. The studies noted above indicate that routine

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28 This is bolstered by reports that up to 60% of grocery items may be bought on impulse (POPAI 1987).
pricing decisions are influenced to a large extent by this heuristic. Despite its prevalence, the empirical evidence on consumers' price knowledge and shopping behavior cautions that this pricing heuristic cannot automatically be assumed to be a satisfactory approximation of profit-maximizing behavior by the supermarket (cf. Papandreou 1955; Coase 1955). For instance, a study of the main factors affecting shoppers' price perceptions of different stores found that loss-leader pricing ranked only seventh, with factors such as size and newness of store and amount of advertising being more influential (Brown 1969). Similarly, in a recent study by Dickson and Sawyer (1990), 50% of buyers surveyed did not have accurate price knowledge, even for items which had just been chosen and placed in their grocery cart. Cox and Cox (1990) found that price advertising was not effective in influencing overall price-image of the store when the items used were national brands; thus, there is no evidence for the consistent occurrence of the price exemplar effect. Moreover, managers appear to hold more definite beliefs about item visibility than do consumers (see Table 5, Chapter IV).

The visible-item pricing heuristic appears to be linked to specific, well-established beliefs about products, consumers and competitors: (i) consumers are aware of between-store price-differentials for visible items (ii) consumers are sensitive to competitive price differentials either in terms of immediate store-switching to purchase "specials" offered by competitors, or in the long-run, through

They conjecture that this might be because national brands are generally more expensive than private label items.
effects on their overall store price image. This implied belief structure forms the basis for the decision heuristic, namely, to match (or even undercut) competitors' price cuts on visible items immediately, and to lower prices to a lesser degree or not at all for less visible items.

The reliance on the heuristic may also influence the type of information routinely requested by managers in pricing of visible items, leading to an emphasis on competitive price checks and changes in sales following price-reductions. A reliance on sales figures, however, may be misleading since sales response to advertised price specials may reflect stocking up by regular customers rather than the generation of new store traffic (Blattberg et al. 1981). In summary, the above review indicates specific market beliefs which are linked to the adoption of a particular pricing decision tactic. As such, it is an appropriate decision context for a study of belief-based managerial decision-making. The specific methodology used in the experimental study is described in the following sections.

SAMPLE

The study used an experimental pricing-scenario method to examine whether beliefs and associated decision routines along with selective acquisition and utilization of market research information, affect decision-making. Sample members consisted of grocery pricing managers from across the country. A national supermarket directory (Chain Store Guide 1991) was consulted to select firms randomly from all regions of the country. The primary pricing decision-maker for
each region was identified (typically merchandising managers or vice-presidents, and in some smaller companies, presidents and CEOs) and contacted by telephone to solicit his/her participation in the study. Those who agreed to participate were mailed the research stimuli (the pricing-decision case and a questionnaire). Response was encouraged by a $1000 lottery as well as an assurance of anonymity and an executive summary of the results.

THE "OURSTORE" PRICING CASE

The aim of the experiment is to examine the extent to which the (belief-based) visible-item pricing heuristic overrides the implications of available market information in making the routine pricing decision, i.e., whether prices are automatically lowered according to item visibility in response to a competitive price-cut. A key issue is whether selective information use occurs such that managers discount and discredit market information that is belief-discrepant, i.e., of information that necessitates a rethinking of heuristics based on established beliefs.

The price decision-making exercise is patterned after Urbany and Dickson (1991). The case describes a typical retail grocery market - "Anytown." Approximately 90% of this market is held by four firms: OURSTORE and MAJOR are the biggest firms while MIDSIZE and FEISTY are the smaller players. The situation presented in the case is one in which the smallest firm, FEISTY, has

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30 See Appendix B.
reduced its prices on a basket of (visible and less visible) items accompanied by aggressive advertising of these prices. OURSTORE's immediate response (at the recommendation of OURSTORE's pricing manager "Tom") has been to leave prices unchanged for six weeks following FEISTY's price initiative, while strongly emphasizing OURSTORE'S quality and service features through advertisements. Tom also commissioned research on the market response to the price-differentials. Sample respondents were required to recommend prices for the nine items for OURSTORE, at the end of the six week-period, drawing on their own experience in similar situations and/or on the market research information about consumers' responsiveness to the prevailing price-differentials.

RESEARCH DESIGN

The experimental manipulations are embedded in the case description. The study involves a 2 (market information: belief-discrepant versus belief-consistent) X 2 (information source: scanner firm versus local market research firm) X 2 (market share of responding firm: 23% versus 40%) between-subjects design. The type of item (high, moderate and low visibility) is a within-subjects factor. A copy of the case and questionnaire is provided in Appendix B.
MANIPULATIONS

Item Visibility

The basket of items to be priced included a mix of visible and less visible items. These were identified from various sources: empirical pricing studies of the grocery pricing industry (e.g., Holdren 1960; Cox and Cox 1990) from the first exploratory study of the dissertation (see Chapter IV) and through informal discussions with a senior executive in the local market. The resulting nine items are grouped into three levels of visibility: bananas, ground beef and milk as the most visible items, Hills coffee, Post cereal and Northern bathroom tissue as intermediately visible items, and Dixie bathroom cups, Vlasic pitted olives and Joy dishwashing liquid as least visible items.

Belief-Discrepancy

An understanding of the beliefs underlying the visible item heuristic suggests a means of manipulating belief-discrepancy, by varying the degree of market response during the six-week period, described in the research information. This provides information about changes in sales for the nine items, percent change in sales for the firm compared to the norm for previous period and switching by consumers from OURSTORE to FEISTY during the six-week period in which its prices are higher than FEISTY's.
Since consumers are believed to be highly (less) sensitive to between-store price-differentials for visible (less visible) items, belief-discrepancy is manipulated in terms of the market response described in the case. In the belief-consistent condition, all the items of information describe OURSTORE's sales as significantly lower owing to the failure to meet FEISTY's prices. For instance, OURSTORE's sales dropped by 2%, and 20% of its customers started shopping the specials of FEISTY and MIDSIZE. In the belief-discrepant condition, the effect on OURSTORE is minimal; store sales actually increased by 1% despite the price-differential, and only 2% have switched stores\textsuperscript{31}.

The practical emphasis in the present study on use of belief-discrepant information in a "typical" market setting, together with theoretical considerations, also makes it important to consider additional factors in the research design. These factors, which may influence the hypothesized reliance on the heuristic and the use of market information are discussed in the next two sections.

**Source of Market Information**

A theoretical consideration is that the expected devaluation of belief-discrepant information and source derogation are likely to be more pronounced if the source of the information is unfamiliar or viewed unfavorably a priori, i.e., it is easier to discount or counter-argue such information. The examination of

\textsuperscript{31} The exact numbers were proposed initially based on the findings of the first study (Chapter IV), and refined by means of a pretest (Chapter VI).
information source as an exogenous variable is particularly relevant in the current research setting because of the existence of a relatively new source of market information, namely, scanner information. The introduction of scanning technology at retail grocery checkouts since the early 1970s has transformed the information environment in this industry, by making available highly detailed, accurate and relatively inexpensive data.

Little and Shapiro (1980) demonstrated the potential use of such detailed information in calibrating econometric models, predicting that this technology could make "...in-store empirical measurements realistically useful in setting prices" (p. s209). It could lead to improved decisions in shelf-space allocation, out-of-stock position, advertising results, pricing decisions and profitability analysis. Thus, scanner data has tremendous potential for improving informedness in price-setting. It should "...lead to more reliable demand analysis... which should aid managers in predicting the effects of price changes for specific products" (Capps et al. 1986, p.98-99).

The comprehensive report by Capps et al. (1986), noted that while the industry has been quick to realize the "hard" benefits of scanner technology in terms of savings in labor costs, increased checkstand productivity and reduced shrinkage through improvements in price accuracy, capitalization on its "soft" benefits (usage in decision-making) has been slow. Less than 10% of firms with scanners used the data in decision-making purposes. They summarized the major barriers to the effective use of scanner data as follows: (i) lack of readily-available and easy-to-use
scanning reports, (ii) inadequate managerial understanding of potential uses, (iii)
inadequate training in use of the data, (iv) insufficient resources and (v) managers'
unwillingness to accept the new technology. A Food Marketing Institute survey
(1985) reported that while 70% of respondents identified the main barriers as limited
staff and financial resources, 15% had problems with internal company coordination
and 35% cited the *reluctance of decision-makers to include the new information in
their established decision-making procedure*. Capps et al. further report that experts
in this industry considered this a fairly significant reason: "...the reluctance of
management to adopt the scanner applications, not financial limitations, was the
major barrier to industry realization of the potential benefits" (p. 16).

If managers resist usage of scanner information in pricing decisions, it has far-reaching implications in the context of the present focus on information
use in routine pricing decisions. If in-depth information updating managerial
decision-makers on changes in the environment is obtained from the new scanner
sources, it may be used less in decision-making because the source is regarded as
less familiar than the more standard market research sources. Moreover, if the
information presented is belief-discrepant, the model (Figure 1) suggests that it will
be evaluated less favorably than similar data generated from a more familiar source
of information.\(^\text{32}\) If such information is more likely to be ignored or discounted,

\(^{32}\) On the other hand, scanner data may be regarded as 'quality' information and may therefore, have greater impact than other sources. This is to be examined in the
pretest.
managers' prevalent market beliefs may obstruct greater learning about the market; therefore, the availability of scanner information may not necessarily improve managers' market understanding or the resulting pricing decisions.

The information source manipulation is also embedded in the market information provided to the pricing manager of OURSTORE. "Tom" is described as having commissioned the information either from a local market research agency (presumably a more familiar source) or from a scanner information service.

**Market Position**

An important influence on the competitive pricing response of an oligopolistic firm is its position in the market. For instance, the classic von Stackelberg model of oligopoly posits that a market "leader" first makes its pricing decision, which influences the decisions of the remaining firms. The tendency of leaders to react differently in competitive situations is indicated in empirical studies as well (Stigler 1964). Fisk et al. (1964) found that the market-share leader in a local grocery market differed "markedly...in failing to respond to feature price advertising...[it] emphasizes the added value of the full market basket" (p. 20). This implies that the leader may be more insulated from the possible adverse effects of not matching competitive price-cuts immediately. A firm with a dominant market position would feel less compelled to apply the price heuristic-cut for visible items compared to a more vulnerable firm. It is expected that a market-leader would consider belief-discrepant market information more than would a "follower." In the
case, OURSTORE is described as either the market leader vis-a-vis MAJOR (with 40% market share) or a less dominant firm (with 23% share).

HYPOTHESES

The preceding sections and the general conceptual formulation lead to several specific hypotheses. It is expected that for less visible items, pricing decisions will be guided more by cost factors than by market considerations (Holdren 1960; Cox and Cox 1990). The response to competitors' prices for these items will be lower than for visible items (cf. Dickson and Urbany 1991).

The general overestimation of consumer price-sensitivity in this industry (cf. Little and Shapiro 1980; Urbany and Dickson 1991; Urbany, Dickson and Key 1990) suggests that overall, there will be a lowering of prices in response to competitors but that this will be more pronounced for more visible items. The proposed model of belief-based routine decision-making implies that the visible item pricing heuristic will be applied by supermarket pricing managers regardless of the implications of market information. The model further implies that the decision to rely on the usual practice of significant price reductions for visible items, even in the face of belief-discrepant information, is expected to be justified by lowered evaluations of the information and/or its source. Specifically:
H1: The pricing decision will be determined more by the visible-item pricing heuristic than by available market information. Specifically, the prices recommended for more visible items will be closer to the competitor's new low prices than those set for less visible items, regardless of market information.

H2a: Market information will be perceived to be less useful in the pricing decision when it is belief-discrepant than when it is belief-consistent.

H2b: Market information will be evaluated more negatively when it is belief-discrepant than when it is belief-consistent.

H2c: The source of market information will be evaluated more negatively when information is belief-discrepant than when it is belief-consistent.

H3: When information is belief-discrepant, evaluation of information quality will be lower when it is obtained from a source regarded less favorably a priori (scanner source) than from a more familiar source (local market research agency).

H4: The pricing heuristic will be applied less strongly and current information considered more for a firm which has a dominant market share than for one which has a smaller share.

H5: Managers affiliated with more formalized or centralized firms will be more confident of their decisions and apply it more strongly than less formalized or centralized firms.

H6: More experienced managers will be more confident of their decisions and apply it more strongly than those with less experience.
MEASUREMENT

**Dependent Measures**

Respondents were required to indicate their pricing recommendations and complete several other measures on a questionnaire (Appendix B). The actual pricing recommendation for the nine items is the most important dependent variable - the extent to which the new prices recommended for OURSTORE correspond to FEISTY's lower prices. The "GAP" dependent measure is a transformation of the price recommended for each item, namely:

\[
\text{GAP}_i = 1 - \frac{\text{Ourp}_{i1} - \text{Feistyp}_{i1}}{\text{Ourp}_{i0} - \text{Feistyp}_{i1}}
\]

where:

- \(\text{Ourp}_{i1}\) : new price recommended for item \(i\)
- \(\text{Feistyp}_{i1}\) : Feisty's new lower prices for item \(i\)
- \(\text{Ourp}_{i0}\) : Ourstore's original price for item \(i\)

This metric implies that, for item \(i\), the recommendation is:

- If \(\text{Gap} = 0\) : not to lower price at all
- If \(0 < \text{Gap} < 1\) : to lower price, but not as much as FEISTY
- If \(\text{Gap} = 1\) : to match FEISTY's price exactly
- If \(\text{Gap} < 0\) : to raise the price
- If \(\text{Gap} > 1\) : to lower the price even below Feisty's price

An open-ended question assessed respondents' reasons for their pricing recommendation and to verify that the visible-pricing heuristic is indeed the basis for the routine pricing recommendation. Seven-point likert scales were used to measure respondents' evaluations of the market information and source in the case. Percentage estimates were also obtained where appropriate, for example, to
assess the extent to which the managers' decisions are based on experience versus market information.

**Manipulation Checks**

Three single item likert scales were used to check the belief-discrepancy manipulation (OURSTORE's customers have noticed that its prices are higher, price-image has been hurt, FEISTY is stealing away a lot of OURSTORE's customers; 1=strongly disagree; 7=strongly agree). Similar items were used to measure other variables, e.g., the realism of the Ourstore case.

**Descriptive Measures**

The questionnaire also obtained descriptive measures of the pricing process in the respondent's firm and of the market in which they operate. These measures assessed (i) general market beliefs, (ii) characteristics of decision environment, i.e., the degree of centralization and formalization in decision processes, (iii) characteristics of the respondent manager, e.g., experience and subjective knowledge and number of stores for s/he sets prices, (iv) use of scanner information in various types of merchandising decisions, (v) market position of the firm, e.g., market share and price-leadership and (vi) price positioning: every-day low prices versus deal-making. The development and refinement of the manipulations and measures are detailed in Chapter VI and Chapter VII.
CHAPTER VI

THE VISIBLE-ITEM PRICING HEURISTIC AND
BELIEF-DISCREPANCY: PRETEST

INTRODUCTION

The dissertation proposes that the prevalence of the visible-item pricing heuristic and the traditional price reactiveness in this industry will result in price-matching decisions even when market information indicates there is no market basis to do so. This chapter describes a pretest, conducted on a sample of respondents from the national population of supermarket pricing decision-makers. The major objectives of the pretest were to validate the belief-discrepancy and visibility manipulations described in the preceding chapter and to examine respondents' perceptions of the 'realism' of the case-scenario. Accordingly, the case description for the pretest contained a simplified experimental design, with only the belief-discrepancy (between-subject) and item visibility (within-subject) manipulations.
SAMPLE CHARACTERISTICS

Calls were made to 213 firms to identify the manager in the organization "most directly responsible for pricing of grocery items in their stores" and to solicit his/her participation. The stimulus materials (case and questionnaire) were then mailed to the 171 respondents who agreed to participate. Follow-up calls were also made, resulting in a final sample size of 74 and a response rate of 39.2%\textsuperscript{33}. Overall, respondents agreed that the Ourstore case describes a typical market situation (mean: 5.6; 1: strongly disagree; 7: strongly agree) and is realistic (mean: 5.6), regardless of the discrepancy condition. Further, 35\% of the sample perceived the information provided in the case to be sufficient. Of the remainder, most cited information about stores' relative positioning (35\%) and effect of Feisty's cuts on total store and department sales (20\%) as important information for the pricing decision.

The questionnaire obtained descriptive statistics about respondents' firms. Twenty-eight percent of the sample reported being price-leaders in their market. 57/73 (78\%) use a strategy of promotions pricing while the remaining are EDLP firms. More than half (57\%) of the sample described their primary pricing goal as that of increasing profit while maintaining their current level of market-share.

\textsuperscript{33} One questionnaire was not used in the analyses, because almost all of it was blank; hence, most analyses are based on n=73.
Increasing market share while maintaining profit level was the goal of 25%, with the remainder characterizing their goal as a combination of both.

THE PRICING DECISION

A repeated measures analysis of variance was conducted to examine the pricing recommendations of managers, with the pricing gap measures for the three categories of visibility items as the dependent variable. To reiterate, this gap measure is as follows:

\[ \text{ItemGAP} = 1 - \{ \frac{(\text{Ourp}_j - \text{Feisty}_j)}{(\text{Ourp}_0 - \text{Feistyp}_1)} \} \]

This metric implies that for item/category \( j \), the decision is:

- If \( \text{Gap} = 0 \) : not to lower price at all
- If \( 0 < \text{Gap} < 1 \): to lower price, but not as much as FEISTY
- If \( \text{Gap} = 1 \) : to match FEISTY's price exactly
- If \( \text{Gap} < 0 \) : to raise the price
- If \( \text{Gap} > 1 \) : to lower the price even below Feisty's price

The analysis reveals that across all products, managers' decisions reflect a tendency to lower OURSTORE's prices in response to FEISTY's initiative; the gap means range from 0.36 (dixie cups) and 0.41 (post cereal) to 0.85 (milk) and 0.99 (ground beef). The degree to which prices were lowered, however, varied considerably, and this is examined below in terms of the manipulations of visibility and discrepancy.
The Visible-Item Pricing Heuristic

A key objective of the pretest was to assess the extent to which the visible-item pricing heuristic is prevalent in the industry. The case description included a within-subject manipulation of item visibility. Items were classified a priori into different categories: 'most visible' (bananas, ground beef and milk), 'moderately visible' (Post cereal, Northern Tissue and Hills Coffee) and 'least visible' (Vlasic olives, Palmolive Dishwashing Liquid and Dixie Bathroom Cups). An important issue is whether these categories are perceived to be differentially visible by managers in the sample. To check the validity of the manipulation each respondent was required to indicate which items he considered\(^\text{34}\) visible in his market, i.e., those items used by consumers to compare the prices of stores. The following table reveals that more respondents characterized items in the first category as visible than in the other categories.

\(^{34}\) There was only one female respondent.
TABLE 9: PRETEST MANIPULATION OF ITEM VISIBILITY

<table>
<thead>
<tr>
<th>ITEM</th>
<th># CHECKS VISIBLE</th>
<th>GREATER MATCHING FOR CHECKS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>54/73</td>
<td>Yes</td>
</tr>
<tr>
<td>Ground Beef</td>
<td>51/73</td>
<td>Yes</td>
</tr>
<tr>
<td>2% Milk</td>
<td>62/73</td>
<td>Yes</td>
</tr>
<tr>
<td>Post Cereal</td>
<td>9/73</td>
<td>Yes</td>
</tr>
<tr>
<td>Hills Coffee</td>
<td>25/73</td>
<td>Yes</td>
</tr>
<tr>
<td>Northern Tissue</td>
<td>39/73</td>
<td>Yes</td>
</tr>
<tr>
<td>Palmolive Dishwashing Liquid</td>
<td>7/73</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: 1. Olives and Bathroom cups were not considered visible so these were not included in the individual level analyses.
2. Significant at p=0.03 or better.

As per hypothesis, the recommendation for greater price lowering for visible items was seen in both the a priori visible categories as well as in the individual-level analyses of items checked as visible by managers. The gap measure is seen to be highest in the most visible category, lower in the moderate category and least in the non-visible category (gap1=0.88, gap2=0.64 and gap3=0.57). This effect is statistically significant (p=0.0001). A test of the differences between the least-squares means indicates that this is due to the difference of gaps between the most visible condition and the other two conditions (the moderate and low gaps were not significantly different from each other).

This same pattern of results is obtained with the more-refined visibility measure which allows for individual differences in perceptions of visibility.
A dichotomous variable was created for each item based on whether the item was checked or not, and t-tests were run for each recommended item. For each item, the recommended price-matching was significantly higher when the respondent considered it to be visible in his market (checked the item) than when he did not.

Managers provided an open-ended rationale for their pricing decision (see coding sheet in the Appendix). Over two-thirds of the sample (52/73) mentioned the 'visible-item' heuristic in one way or other. Of these, 89% recommended matching prices of the most visible items with less price movement on other items; among these, 6% specifically indicated that they believe that consumers have a better memory for visible items. Nearly half the sample (51%) indicated that their perception of item "visibility" is based on membership in a high-turn category. A fourth of the sample responded that visible items are dominant brands in a category, while the remainder (24%) characterized it as determined by both factors.

**Belief-Discrepancy**

The between-subject manipulation of belief-discrepancy was embedded in the case-description. Information was provided about the (lack of) response in the Anytown market to the new price differentials. In the discrepant condition, the market information indicated that a "low" percentage of OURSTORE

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35 Only three respondents cited other heuristics such as price points (keeping the price of milk below $2.00, for example) or specific price-spread for an item relative to competitors.
consumers switched to the lower-priced stores to shop their specials following OURSTORE's failure to match FEISTY's prices); the "low" percentage was set at 7%. In contrast, the 'belief-consistent' version indicated that there was a "high" (30%) incidence of switching. A third, deliberately high, switching level (45%) was also included in the design. It was expected that evaluation and use of discrepant information would be more favorable if such information were in the direction of managers' bias of perceiving "high" market sensitivity in the retail grocery market.

The efficacy of the discrepancy manipulation was assessed by means of several seven-point (1: strongly disagree; 7: strongly agree) likert scales. The analysis of this data suggests that the manipulation was not effective in shaping respondents' perceptions of market response. Specifically, the manipulation of switching level (7% versus 30% versus 45%) had no effect on managers' perceptions that (i) Feisty was stealing a lot of Ourstore's customers (overall mean: 4.3), (ii) the effect in terms of Ourstore's sales was lower than expected (mean: 3.8) or on (iii) the switching statistic provided in the case was at the expected level (mean: 3.5). Respondents were undecided whether they would expect a greater market responsiveness to Feisty's price initiative (mean: 3.9).

The switching manipulation had no effect on the other information perception measures. While respondents agreed that the market research information provided was relevant (mean: 4.7) and useful (mean: 4.5), they were undecided about the quality of the information (mean: 4.4) and about its credibility (mean: 4.4) and the credibility of the information source (mean: 4.3).
Although the discrepancy manipulation did not affect general perceptions of market response, the repeated-measures analysis of variance examined whether the manipulation of belief-discrepant versus belief-consistent market information affected the pricing behavior, i.e., the standard application of the pricing heuristic. There was a main effect for the between-subjects information condition (i.e., level of switching at 7%, 30% and 45%). The analysis indicates that the degree of matching that occurred was greater ($p=0.02$) when the magnitude of switching was higher (mean gaps for the three levels are 0.60, 0.66 and 0.82). The comparison of the least-squares means shows that this is driven by the fact that matching is greater in the 45% condition than in the other two (no difference in gap means between the 7% and 30% conditions).

Interaction Between Visibility and Discrepancy

The hypothesis suggested by a review of the empirical studies addressing the visible-item heuristic was that the consideration of discrepant information would be more pronounced for less visible items. This was based on the premise that the heuristic provides a clear-cut decision rule for visible items but not for others. Thus information should have a greater effect in the less visible categories. The data reveal no support for this hypothesized interaction between item visibility and information discrepancy. Table 10 provides summary statistics for price-matching by information level.
TABLE 10: EFFECT OF ITEM VISIBILITY ON PRICES RECOMMENDED FOR OURSTORE (PRETEST)

<table>
<thead>
<tr>
<th>VISIBILITY LEVEL</th>
<th>MEAN ESTIMATE OF GAP (BY SWITCHING LEVEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>High Visible</td>
<td>0.77</td>
</tr>
<tr>
<td>Moderate Visible</td>
<td>0.52</td>
</tr>
<tr>
<td>Low Visible</td>
<td>0.52</td>
</tr>
</tbody>
</table>

FURTHER CONSIDERATIONS ABOUT THE PRICING DECISION

Evaluation of Tom's Decision

The data reveal that 20/73 respondents (27% of the sample) spontaneously volunteered judgment on Tom's decision to 'wait-and-see.' It is interesting that these respondents were equally split between whether they approved or not of his decision. The majority of the sample (85%) recommended not waiting any longer for the remaining large competitor, Major, to respond to Feisty. On average, these pricing executives believed that Feisty's price impact on Ourstore would be felt within 10 weeks (their estimates ranged from 1-52 weeks); the time-frame provided in the case was 6 weeks.

Market-Share

Managers' responses to the open-ended question also provide insight into additional influences on the pricing decision. Nearly a third of the sample
(21/73) commented on the market position of Ourstore in explaining their pricing decisions. Note that market share was not manipulated in the pretest: Ourstore was described as being the market leader with 40% share. Economic theory (e.g., Stigler 1964) suggests that firms with high market share (stronger market position) have some degree of insulation. This implies that Ourstore will be better able to weather any possible adverse market reactions from not responding automatically and immediately to Feisty's price initiative.

This proposition was supported only to a limited extent. Twelve of the 21 managers addressing the issue recommended lowering prices but did suggest some moderation in the degree of price matching. They also recommended that price-cuts should be accompanied by some other action as well to signal that Ourstore was not merely a follower. The responses of the remaining nine managers indicate that concerns about the potential loss of market share were, if anything, more pronounced for firms with larger market share. These respondents commented that Ourstore would lose valuable market share and image by not responding and that it should respond immediately by matching Feisty's prices.

Anchoring Bias

To obtain a better understanding about how respondents perceived the market information presented in the case, they were reminded that it was a sample statistic and that the true value may be at a different level. They were requested to provide, from their experience in their own markets, estimates (range)
of how much switching would occur in the market situation described in the case. On average, the degree of perceived market response was high: the lower estimate provided was 14.2% and the higher estimate was 21.9%. Further, the difference between the average range estimated by respondents and the switching statistic in the case differed by discrepancy level. Specifically, in the 7% ("discrepant") condition, respondents' estimates were not different from the switching level (difference=0.55). In the 30% case, the average difference was -8.66% and in the 45% condition, -20.81% (p=0.0001). Similarly, the average estimate was affected by the discrepancy manipulation (p=0.01). It was significantly lower in the 7% condition (4.1%) than in either the 30% (8.6%) or the 45% (10.0%) conditions.

These results have important implications for the dissertation research methodology. From a measurement perspective, it suggests the need for refinement of the discrepancy manipulation since the 7% condition was not perceived to be 'discrepant.' Moreover, the effect of the switching level provided in the case on managers' estimates reveal an anchoring bias (Kahneman and Tversky 1982), i.e., managers' estimates of the "true" level of switching are susceptible to the initial value they encounter and thus, do not appear to reflect "external" knowledge about the magnitude of market response. This may be either because managers are ill-informed about such parameters, or because their markets are volatile and typically reflect a wide range of reactivity. This issue is worthy of further investigation.
Importance of Different Types of Information

The practice of pricing items according to visibility implies that different types of information are more important for different items. Specifically, it suggests that price-checks are more important and cost-information least important for high-turn items; conversely for less visible items. The pretest attempted to examine this issue in the questionnaire. Unfortunately, the measure in the pretest is problematic. Managers were asked to provide a ranking from 1-5 for different types of information for each item: price-checks, cost information, price-image information, sales movement and profit goals. Instead, most respondents rated this on a scale of 1-7 (1:most important); this is probably due to a predominance of such scales in the first part of the questionnaire.

To avoid discarding this data, 10 different variables were created: 5 ratings of information types for 2 item types (high and low visible). There is a lot of missing information, especially for the low visible column. Consequently, the results are subject to a high degree of noise and must be regarded with some reservation. The results indicate that in pricing visible items compared to less visible items, important information consisted of price checks (54/66 versus 24/55), store price-image information (47/63 versus 30/57) and item sales changes (43/61 versus 23/60). Profit goals were considered for both categories of items by about equal proportions (32/61 versus 32/58) as was cost information (45/66 and 40/56).
General Perceptions About Different Information Sources

An important experimental manipulation in the main study is the source of market information. The hypotheses about the evaluation of source of (belief-discrepant) information were based on assumptions about differential evaluations of scanner information firms and local market research firms by supermarket pricing managers. It was assumed that local market research agencies would be viewed more favorably than scanner sources because the former are presumably more familiar. This is subject to further empirical substantiation and is addressed in the pretest.

A series of scales assessed respondents' perceptions of different sources: company records, scanner sources, other firms, trade journals, price checking services and academic sources. The dimensions of information perception included familiarity with the source, reliability / trustworthiness, value-for-money, amount of irrelevant information and ease of use. Coefficient alphas were computed for these scales and across all the sources. Reliabilities were found to improve if the redundancy item was dropped. The remaining four scales were collapsed to form an overall measure for each source.

The analysis reveals that company records received the highest ratings followed by price-checks. Academic sources were rated the lowest. Coefficient alphas and means are listed in Table 11 (1: least favorable, 7: most favorable).
It was hypothesized that the perceptions of each source would be affected by the respondent's familiarity with the source. Therefore, the scales were recomputed omitting the familiarity measure and regressions were done with familiarity as the predictor variable. For all sources, the evaluations of the source significantly improved with degree of familiarity with that source (p=0.0001)\textsuperscript{36}.

Thirty-eight percent of the sample indicated that they use scanner data in routine pricing decisions. Since this was a dichotomous (yes/no) measure, it is not clear how such information (or what) is used; this will be examined in the next study. The average perceived usefulness of scanner information was low (mean: 3.6; 1=not at all useful, 7= extremely useful). However, it was significantly higher for

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\textsuperscript{36}The term "other sources" caused confusion among respondents. This should have been more specific, by mentioning "local market research firms" or "newspaper research studies."
respondents who used scanner information than for those who did not (5.4 versus 2.3, p=0.0001). Respondents appeared to be confused by the term "other firms;" in retrospect, this source should have explicitly been labelled "local market research agencies" in the pretest. Therefore, it is difficult to interpret whether these results reflect an accurate difference in evaluations between local market research agencies and scanner firms, as required to test the assumption underlying the source manipulation in the main study.

SUMMARY AND DISCUSSION

The findings from the pretest provided important guidelines for the design and conduct of the main study. The majority of managers in the present sample (60%) of respondents indicated that their price decision was based on experience alone, compared to 15% for information alone (the remainder said they used some combination of both). This provides reassurance that examining responses to the decision situation through the case scenario is a legitimate method of examining belief-discrepancy. Overall, the pretest findings prove to be invaluable in obtaining a better understanding of the retail grocery market, with respect to the market perception variables of interest, and provide a strong empirical basis for the design of the main study. The major findings and implications are discussed below.

The results are consistent with earlier research (e.g., Urbany, Dickson and Key 1990) and supports the assumption being made in the dissertation, that managers in the retail grocery market attribute a high degree of price
awareness and price sensitivity to consumers and competitors, which results in a tendency to lower prices automatically in response to competitors. While 12/73 respondents noted that this may lead to price-wars, they felt that this was regrettable but unavoidable.

The study provides support for the dominant influence of the visible-item pricing heuristic. It indicates that the heuristic dictates structural markups that are low (even negative) for high visibility items and correspondingly higher markups for other items. This means that information use may not be greater in pricing less visible items.

The visibility manipulation appears to be legitimate. Since Palmolive dishwashing liquid, an item categorized as 'non-visible,' was perceived to be visible by 7 respondents, it is replaced by a lesser brand name in the same category (Joy) in the main study.

The findings indicate the need for refinement of the belief-discrepancy manipulation for the main study. The 7% switching level was not regarded as an unexpectedly low estimate. It is difficult to manipulate discrepancy because, as seen by the anchoring result, managers are suggestible as to the magnitude of customer response. Nevertheless, managers' beliefs that consumers notice price differentials of high-turn items which influences their store price-image and store-switching behavior, suggests ways to improve the manipulation. For the main study therefore, the switching percentage is dropped to 2%, and additional market information on changes in market share and store sales is provided.
Managers are seen to use market information selectively. The main effect of information on the pricing decision is driven purely by the 45% switching level, even though this figure was acknowledged by managers as being significantly higher than the "true" level.

Market share considerations are seen to be an important justification for the pricing decision. While maintaining market share was cited as a reason for immediate response (the opposite had been expected), it is unclear whether low market share would diminish pricing response. This is investigated further in the main study.

A fairly large proportion of the sample (40%) reported usage of scanner information in pricing decisions and evaluated scanner information favorably. This contradicts the assumption that the relative unfamiliarity of scanner information in decision-making may cause it be evaluated negatively. This suggests that the effect of actual usage needs to be considered in evaluating the information source manipulation in the main study.
CHAPTER VII

STUDY II: THE USE OF BELIEF-DISCREPANT INFORMATION
IN ROUTINE GROCERY PRICING DECISIONS

INTRODUCTION

This chapter describes the main experimental study of the effect of managers' market beliefs (as reflected in their application of the visible-item pricing heuristic) on their use of belief-consistent versus belief-discrepant information in making routine pricing decisions. It is assumed that such frequent decisions are relatively less effortful and require less attention to detailed information than nonroutine decisions (cf. Ashforth and Fried 1988). Therefore, it is expected that the pricing decision will be guided more by the prevalent heuristic than by current information about market conditions. The model of information use (see Chapter III) proposes that managers' evaluations of available market information will be influenced by its correspondence with their market beliefs. Belief-consistent information will be perceived to be more credible, of higher quality and more useful than belief-discrepant information.
The discounting of belief-discrepant information is also expected to be more pronounced when it is obtained from a scanner data firm (assumed to be less familiar) than from a local market research agency (assumed to be more familiar). Similarly, firms with a vulnerable market position are expected to consider information less if it implies a deviation from the accustomed practice.

The study involves a 2 (nature of information: belief-discrepant versus belief-consistent) X 2 (market share of Ourstore: larger market share versus smaller market share) x 2 (source of market information: scanner firm versus local market research firm) factorial design with type of product (3 levels of visibility) as a within-subject factor. The case-scenario methodology is detailed in Chapter V. The manipulations in this study were refined based on the pretest (Chapter VI).

ANALYSES AND RESULTS

SAMPLE CHARACTERISTICS

The respondents in this study comprise a separate sample of supermarket managers drawn from the same population as in the pretest. About 525 pricing managers (80% of the potential respondents contacted by telephone) from all over the U.S. agreed to participate and were mailed the stimulus materials. Of these, 183 usable questionnaires were returned, for a response rate of 34.9%.

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37 This is slightly lower than the 40% rate obtained in the pretest and in previous studies (e.g., Urbany and Dickson 1991).
Thirty-five percent of the respondents report that their firms are price-leaders in their market. The majority (74%) rely on a strategy of promotions pricing rather than EDLP. For half the sample, the primary goal is to increase profit and maintain the current level of market-share (51.4%); the other half (46.4%) indicate the opposite, i.e., increasing market share while keeping profits steady. In general, the participants in the study can be characterized as "expert" decision-makers; these managers have an average of 16 years of pricing experience for 23 stores. Moreover, they considered themselves to be experts; they strongly agreed that they were very knowledgeable about making pricing decisions in the supermarket industry (mean: 5.9 on a 7-point scale).

MANIPULATION CHECKS

The Ourstore Case

A copy of the case, in which the manipulations are embedded, is presented in Appendix B. Eight versions of the basic scenario were created (described in Chapter V) representing the factorial design. On average, managers found the case to be realistic (mean: 5.9; 1=strongly disagree, 7=strongly agree). A similar item assessed their perceptions about how typical the Anytown market is of

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This was a forced choice question; nevertheless, 4 respondents characterized their pricing goals as "both."
retail grocery markets in general. While they did perceive the case to present a
typical situation, this measure was affected by the discrepancy manipulation:
managers perceived the case to be more typical in the discrepant condition than in
the expected condition (6.2 versus 5.8, p=0.02). Thus, the situation of low market
response appears to be one that managers encounter more frequently than that of
high responsiveness.

Contrary to the assumption made in formulating the study,
managers appear to find routine pricing decisions to be involving (mean: 4.8),
necessitating detailed consideration of all available information (mean: 5.2)\(^3\). While this is unexpected, this should be reflected in more information use and work
against the hypotheses, making it a more conservative test of the model. In
accordance with the assumptions of the model, managers acknowledge that they do
not feel pressured on each occasion because each individual decision is not of great
consequence (mean: 4.1).

**Item Visibility**

The within-subjects manipulation of item visibility (validated in the
pretest) groups nine items into three categories: bananas, ground beef and milk are
classified as high visibility items, Northern bathroom tissue, Hills coffee and Post
cereal as medium-visibility items, and Joy dishwashing liquid, Vlasic olives and Dixie

\[^3\] The instrument did not include a measure assessing how respondents characterized
this decision relative to more strategic pricing decisions.
bathroom cups as low visibility items. To examine this manipulation, managers were
asked to list the subset of these nine items that they considered to be 'visible' in
their own market (a "visible" item was defined on the instrument as one that signals
price image and/or is used by shoppers in between-store price comparison). The
results are reported in Table 12. On average, 97.2% of the sample considered items
in the first category to be visible, compared to 56.5% in the second. Two of the
items in the third category (olives and bathroom cups) were automatically assumed
to be not visible and coded as zero\textsuperscript{40}. Thus, only 12% of the sample considered
items in the third category to be visible. Overall, these results suggest that the
classification of visibility is legitimate for the present sample\textsuperscript{41}.

\textsuperscript{40} This was supported in the present data: only one respondent in the sample checked
either item as visible.

\textsuperscript{41} Note however, that Post Cereal was listed by fewer respondents as 'visible' than Joy
dishwashing liquid.
TABLE 12: MANIPULATION OF ITEM VISIBILITY

<table>
<thead>
<tr>
<th>ITEM</th>
<th># CHECKS VISIBLE</th>
<th>GAP MEANS (CHECKED VS. NOT)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>176/181</td>
<td>1.01 vs. 0.28</td>
<td>0.0000</td>
</tr>
<tr>
<td>Ground Beef</td>
<td>178/181</td>
<td>1.09 vs. 0.96</td>
<td>0.0484</td>
</tr>
<tr>
<td>2% Milk</td>
<td>178/181</td>
<td>0.86 vs. 0.43</td>
<td>0.0001</td>
</tr>
<tr>
<td>Post Cereal</td>
<td>54/181</td>
<td>0.76 vs. 0.37</td>
<td>0.0000</td>
</tr>
<tr>
<td>Hills Coffee</td>
<td>104/181</td>
<td>0.91 vs. 0.50</td>
<td>0.0001</td>
</tr>
<tr>
<td>Northern Tissue</td>
<td>149/181</td>
<td>0.96 vs. 0.37</td>
<td>0.0001</td>
</tr>
<tr>
<td>Joy Dishwashing</td>
<td>65/181</td>
<td>1.01 vs. 0.70</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Belief-Discrepancy

Belief-discrepancy was manipulated by varying the described degree of market response to Feisty's price cuts. In the 'expected' or belief-consistent condition (denoted as the "20%" condition hereafter), all the items of market information (see Appendix B) indicate that Ourstore's failure to match Feisty's prices immediately cost the firm in terms of sales and market share. In contrast, the belief-discrepant information condition ("2%" condition) describes Ourstore as being unaffected by its price inaction.42

This manipulation of belief-discrepancy was checked in different ways. First, three 7-point likert scales were used to ascertain whether managers

42 This manipulation represents a refinement of that used in the pretest.
perceived the impact of Feisty's price cuts to be higher in the 'expected' than 'discrepant' condition. The analysis shows that in the 20% condition compared to the 2% one, respondents agreed more strongly that Anytown consumers had noticed the price differentials (5.2 versus 4.6, p=0.004) and that these differentials had hurt Ourstore's price image (5.0 versus 4.2 p=0.006). Moreover in the 20% case, managers were undecided whether Feisty was "stealing a lot of Ourstore's customers" whereas they disagreed that this was so in the 2% condition (4.3 vs 3.4, p=0.002).

A second manipulation check required managers to describe the switching statistic (2% versus 20%) as "higher," "lower" or "consistent" with their expectations. This was significantly affected by the discrepancy manipulation. Fifty-one percent of respondents in the discrepant condition (and 16% in the expected condition) indicated that the figure was "lower than expected." By comparison, 61% in the expected condition described the statistic as "expected" and 23% as "higher than expected" ($X^2=33.6$, p=0.0). It should be noted that (probably on account of an anchoring effect to be discussed later) 47% of the respondents in the "discrepant" condition still report that the switching figure is about what they would expect.

It is not surprising that agreement is not higher. Recall that the switching statistic in the case refers to the percent of cherry-pickers rather than those who have switched their primary store to Feisty. The pretest results indicate that managers believe that market response will mostly influence customer awareness of price differentials for high-turn items and perceived store price-image rather than store-switching behavior.

The main analyses was repeated deleting these subjects. Since it did not change the qualitative nature of the results, the statistics are henceforth provided only for the full sample.
Finally, managers provided their own estimates about the "true" degree of switching that would occur based on their experience in similar market situations. Managers' estimates were, on average, 4.3% higher than the 2% in the discrepant condition and 3.8% lower than the 20% in the expected condition (p=0.0001), i.e., they perceived the 2% level to be somewhat lower than they would expect while the 20% figure is somewhat higher. The latter finding does not weaken the manipulation. The pretest indicates that deviations from an expected magnitude does not affect information use symmetrically: the 45% level in the pretest, while acknowledged to be much higher than expected, still led to greater price-matching because it was in the direction of the belief about 'high' market responsiveness. Collectively, these results indicate that the discrepancy manipulation was effective in influencing managers' perceptions of the degree of market responsiveness following Feisty's price cuts.

TESTS OF HYPOTHESES

ANALYSIS

The documented price-reactivity in this market (e.g., Boynton et al. 1983) suggests that the standard response to a competitor's price reduction will be to lower prices. In the Anytown scenario, however, the pricing manager ("Tom") of Ourstore has allowed a price-differential to persist for a period of 6 weeks. Instead of price-cuts, he resorted to an ad campaign emphasizing quality and
service. This section examines the prices respondents recommended that Ourstore adopt after this time-period has elapsed, by examining the direction and degree of price change for different items, and the reasons underlying these decisions.

The data were analyzed using a repeated measures ANOVA with information discrepancy, market share and information source as between-subjects factors and item visibility as a within-subject factor. The dependent variable was the "price-gap" measure described in the previous chapter, which assesses the degree to which the new recommended prices for Ourstore match Feisty's prices. Owing to the unbalanced nature of the data, the GLM procedure was used in SAS. Significance (or lack thereof) was determined by consulting the Type III statistics and by post-hoc comparisons of the least-squares means. All between-subject effects were tested using the appropriate (between-subject) error term.

Table 13 reports the average "gap" scores for each item and for each category of items. For all items, the average gap is significantly different from zero; the lowest is 0.40. This implies that managers recommended a significant price reduction for all items in response to Feisty's price initiative. This finding is consistent with previous reports on price-cutting in this market (cf. Boynton et al 1983; Urbany and Dickson 1991).

\[ GAP = 1 - \{ (Ourp_{ij} - Feistyp_{ij})/(Ourp_{ij0} - Feistyp_{ij}) \} \] For category \( i \),
  - If Gap=0 : price not lowered at all
  - If 0<Gap<1: price lowered
  - If Gap=1 : FEISTY's price matched exactly
  - If Gap>1 : FEISTY's price undercut.

Under the "TEST H=" and "E=" options in the GLM procedure.
TABLE 13: COMPETITIVE PRICES RECOMMENDED FOR OURSTORE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEAN GAP (ITEM)</th>
<th>MEAN GAP (CATEGORY)</th>
<th>T STATISTIC (H: μ=1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>0.99</td>
<td>0.97(^a)</td>
<td>0.28</td>
</tr>
<tr>
<td>Ground Beef</td>
<td>1.09</td>
<td>3.69</td>
<td>3.69</td>
</tr>
<tr>
<td>2% Milk</td>
<td>0.85</td>
<td></td>
<td>5.97</td>
</tr>
<tr>
<td>Post Cereal</td>
<td>0.49</td>
<td>0.69(^b)</td>
<td>14.08</td>
</tr>
<tr>
<td>Hills Coffee</td>
<td>0.74</td>
<td></td>
<td>8.18</td>
</tr>
<tr>
<td>Northern Tissue</td>
<td>0.86</td>
<td></td>
<td>4.21</td>
</tr>
<tr>
<td>Vlasic Olives</td>
<td>0.49</td>
<td>0.57(^c)</td>
<td>13.53</td>
</tr>
<tr>
<td>Joy Dishwashing</td>
<td>0.81</td>
<td></td>
<td>6.43</td>
</tr>
<tr>
<td>Dixie Cups</td>
<td>0.40</td>
<td></td>
<td>18.04</td>
</tr>
</tbody>
</table>

Note: a. Means with different letters are significantly different from each other (p=0.0001)

THE VISIBLE-ITEM PRICING HEURISTIC

Pricing According to Visibility of Item

The market beliefs associated with the visible-item pricing heuristic are listed in Table 14 along with the associated descriptive statistics. Managers' responses to a series of belief scales indicate strong agreement with these beliefs. Most (81%) managers considered their market to be very price competitive. It is seen that a majority of respondents (67%) subscribe to the belief that the prices of
select items influence store price-image and that consumers are aware of (88%) and sensitive to (78%) price-differentials on these items. Over half agreed that generally, most consumers shop the price-specials of different supermarkets.

**TABLE 14: GENERAL MARKET BELIEFS**

<table>
<thead>
<tr>
<th>SCALE ITEM: MARKET BELIEFS</th>
<th>MEAN</th>
<th>CONFIDENCE</th>
<th>1000 PERCENT AGREEING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumers' price image of store based on prices of few items</td>
<td>4.9</td>
<td>6.2</td>
<td>67.2%</td>
</tr>
<tr>
<td>Consumers aware of prices of frequently-bought items</td>
<td>5.9</td>
<td>6.4</td>
<td>88.0%</td>
</tr>
<tr>
<td>Consumer sensitive to store price differentials on these items</td>
<td>5.3</td>
<td>6.2</td>
<td>77.6%</td>
</tr>
<tr>
<td>Most consumers shop between-store price specials</td>
<td>4.7</td>
<td>6.1</td>
<td>56.8%</td>
</tr>
<tr>
<td>Local grocery market very competitive</td>
<td>5.9</td>
<td>6.5</td>
<td>81.4%</td>
</tr>
<tr>
<td>High competition equates cart prices</td>
<td>5.0</td>
<td>6.1</td>
<td>67.8%</td>
</tr>
</tbody>
</table>

H1 proposes that the pricing decision will be driven by the standard heuristic. Specifically, the routine grocery prices will be determined in accordance with the 'visible item' pricing heuristic. Items believed to be most 'visible' to consumers will be priced at or below competitors' prices, while less visible item pricing will tend to be guided by cost factors (cf. Holdren 1960; Cox and Cox 1990).
An initial understanding of whether this is supported in the present data is afforded by examining the t-statistics associated with the test of whether each of the new prices matches Feisty's prices exactly (see Table 13). The statistics indicate that in the visible category, managers recommend that Ourstore match prices for bananas and undercut Feisty for ground beef. For the remaining seven items, the recommended prices are slightly higher than Feisty's, although the magnitude of the price differentials does vary by visibility. The differential is smallest for the most visible category and largest for the least visible category.

The effect of item visibility on its recommended price is addressed more formally in the analysis of variance. The analysis shows that the within-subject visibility manipulation had the hypothesized main effect on the pricing decision. Items in more visible categories were priced closer to Feisty than those in less visible categories (0.97 vs. 0.69 vs. 0.57, p=0.0001). The dominant effect of the heuristic is also seen in that, item visibility alone explained 70% of the variance in recommended prices. The comparison of the least-squares means indicates that the gap mean for each category is significantly different (p=0.0001). Thus, managers recommended matching Feisty's prices for the most visible items, lowering prices to a lesser degree for the intermediate category, and least for the third category.

The effect of item visibility is assessed in a second way as well. Managers classified seven of the nine items as being visible or not in their own markets. Individual t-tests were run to examine whether the gap score for each item

47 The procedure in SAS utilizes Fisher's least-significant difference method.
was affected by the resulting dichotomous variables. The analyses indicate that for each item, the recommended price-reduction is significantly larger when the item is considered to be visible than when it is not (see Table 12).

Of the 176 managers who provided an (open-ended) evaluation of Tom's decision, the majority (62%) disapproved, indicating that they believed this decision would be costly for the company. The remaining 38% approved of the strategy, especially the advertising campaign. Those who approved of Tom's action recommended smaller price reductions than those who disapproved (0.60 versus 0.84, \( p=0.0001 \)). These judgments about Tom's decision to avoid an automatic price response were not affected by the market response described in the case (\( p=0.29 \)).

The above analyses permit an inference about the role of the visible-item heuristic in respondents' pricing decisions. The questionnaire also examined managers' underlying beliefs by obtaining their rationale for their pricing decision, through an open-ended question immediately following the pricing task. These responses were coded according to whether the prices were based on (i) the visibility heuristic, (ii) considerations of market share and (iii) other reasons. The frequencies show that managers do offer a 'visibility' explanation; seventy-six percent (128/168) mentioned pricing based on item visibility. The tendency to attribute high price sensitivity to consumers is further reflected in the decision of 16% of the sample (27/168) to match Feisty's prices for all items immediately. Only

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48 This includes those who fall into levels 2, 4 and 5 in the coding scheme for this variable (Appendix C, section A).
4/168 managers suggested not lowering prices at all (three of these were in the discrepant condition, one in the other). Thus, the data reveal strong support for H1a.

**Pricing According to Discrepancy of the Market Information**

If the routine pricing decision is driven by a heuristic which dictates structural markups for each category of items, it should not be affected by external market research information. The analyses reveal no main or interaction effects among any of the between-subjects factors. Managers recommended lowering prices in response to Feisty (the average pricing gap is 0.75) regardless of whether the market information was belief-consistent or belief-discrepant. The pricing decision for various items is not based on the direct implications of the market information. This is qualified by an interaction (p=0.003) between discrepancy and visibility.

**Interaction Between Item Visibility and Information Discrepancy**

While managers were unaffected by the discrepancy of market information in pricing moderate and low visibility items, they recommended greater price-reduction for highly visible items (bananas, ground beef and milk) in the 20% condition than in the 2% condition (gap means: 1.04 versus 0.91, p=0.0001). Thus, the price-lowering tendency was accentuated for these items when information was belief-consistent than when it was belief-discrepant (see Figure 2, Table 15)\(^{49}\).

\(^{49}\) The inclusion of information discrepancy contributes only an additional 1% to variance explained by visibility (R\(^2\)=0.71).
FIGURE 2: INTERACTION BETWEEN VISIBILITY AND DISCREPANCY
TABLE 15: INTERACTION BETWEEN VISIBILITY AND DISCREPANCY

<table>
<thead>
<tr>
<th>INFORMATION</th>
<th>LEVEL OF VISIBILITY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Discrepant</td>
<td>0.91&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.69&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Expected</td>
<td>1.04&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.70&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note: (a) Means with different letters significantly different (p<0.001). Means with the same superscript are not significantly different from each other.

TABLE 16: EFFECT OF INFORMATION DISCREPANCY ON PRICES OF MOST VISIBLE ITEMS

<table>
<thead>
<tr>
<th>INFORMATION</th>
<th>ITEM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bananas</td>
<td>Ground Beef</td>
</tr>
<tr>
<td>Discrepant</td>
<td>0.91&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.04&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Expected</td>
<td>1.07&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.13</td>
</tr>
</tbody>
</table>

Note: (a) Means with superscript 'a' are not significantly different from 1 (i.e., complete matching)
  (b) All pairs of means significantly different from each other except for ground beef (p=0.08).

Why does this observed interaction occur? At the outset of the dissertation, the heuristic was thought to represent a pricing guideline only for visible items, because of which it was expected that market information would be perceived to be helpful in pricing less visible items. Instead, the pretest data (and,
in retrospect, Holdren 1960; Cox and Cox 1990) indicated that the heuristic implies structural markups for both categories of items. For less visible items, price should be lowered to a lesser degree which is consistent with the predetermined mark-up goals for these items. Therefore, one might expect no interaction at all.

A careful consideration of the observed pattern suggests that it is very amenable to an explanation in terms of selective information use. As noted in the literature review (Chapter III), biased assimilation comprises two tendencies: that of selectively using supportive information and that of discounting discrepant information (cf. Frey 1982). The pretest, in fact, finds evidence only for the former tendency. Price-setters exhibited a willingness to interpret information to reinforce their standard practice and the underlying beliefs. For instance, post hoc contrasts in the pretest reveal that the observed main effect of discrepancy on pricing is due to the greater price-reduction recommended in the 45% switching condition. There was no difference in prices between the 30% or the 7% levels. Although managers characterized the 45% switching statistic as "higher than expected," their pricing response was nevertheless influenced by it. It strongly reinforced the belief about high market responsiveness to price-differentials, it was "used" in setting prices.

The present interaction (significantly greater price matching for the most visible items in the 20% than 2% condition) appears to reflect a similar tendency. When information indicates little market response to price-differentials for these critical items, it is ignored and the heuristic is applied regardless, to narrow the price differential with Feisty significantly; the gap mean for these
items (0.91) approaches one\textsuperscript{50}. In the consistent condition, the information strongly reinforces beliefs about market responsiveness to price-differentials on visible items (a "worst-fears-come-true" perspective) and therefore, supportive information is reflected in the even lower prices set for these items.

\textbf{Additional Influences on Pricing}

Respondents referred to a few other considerations that influenced their pricing decisions. Nearly 40\% of those citing additional factors (22/59 respondents) recognized that the price reductions recommended involved the possibility of price-wars in the market; nevertheless, of these, 17 still recommended a very aggressive approach to "...show Feisty that Ourstore will not be intimidated." Target profit margins and costs were an explicit consideration for 21/59 managers. Eleven managers cited further rules of thumb such as maintaining a specific price-spread vis-a-vis Feisty for certain items and remaining below specific price-points.

\textbf{Impact of Information}

Analysis of the data from the present study indicates that the market information had minimal impact. As noted earlier, managers' judgment of Tom's decision and their own pricing recommendations were unaffected by the

\textsuperscript{50} It may be argued that even in the 2\% condition the price-gap for visible items (0.91) is, on average, still significantly lower than one. Table IV B shows that this is due to the inclusion of milk in this category. The price recommendation is to match Feisty exactly, in the 2\% condition, for bananas and ground beef.
market information in the case. In addition, they provided an estimate of the impact of their prior experience in similar situations relative to market information on their decision. On average, 71% of the price decision was attributed to prior experience. Further, only 9 respondents (5.4% of the sample) explained their prices in terms of the sales response data for each item provided in the case.

In fact, only 41/182 respondents (23%) ever referred to the market information in their open-ended discussion of their pricing decision. Of these, seven managers characterized the collection of information in the case as "too costly" and "wasteful" while 34 managers cited the information to justify their answer. It is interesting that these respondents fell equally into both discrepancy conditions: 16 from the 2% condition and 18 from the 20% condition (p=0.80). This is another indication of selective information use, i.e., interpreting ambiguous information as supportive (cf. Kunda 1990). For the remainder (78%) of the sample, the market information was not at all a consideration in the price decision.

All of these statistics might suggest that the information (presented on a separate page of the case) was ignored by respondents. The discrepancy manipulation checks, however, together with the analyses described below, indicate that managers did attend to and evaluate the information. Another alternative hypothesis is that the information provided in the case was simply perceived to be insufficient. To address this possibility, the questionnaire obtained an open-ended assessment of the perceived adequacy of market information as well as additional information which managers considered useful in making the pricing decision. A
quarter of the sample (24.6%) indicated that they required no additional information. The remainder cited various items of information as being potentially useful including the relative positioning of different stores in the market of each store (29%), previous advertising and promotions activity (12%), a more extensive price survey (15%), more detailed information on total store and category sales after Feisty’s price cuts (15%), customers’ subjective reactions to the cuts (14%) and customer counts and sales per transaction, especially compared to previous periods (9%). The analysis was repeated to examine whether the pricing decision differed between the 25% that considered the information to be sufficient and those who suggested the need for additional information: it did not (p=0.29). The results discussed below provide further evidence that managers did attend to the information and evaluate it.

EVALUATION OF INFORMATION AND SOURCE

According to the model, belief-discrepant information should be evaluated more negatively and perceived to be less useful than belief-consistent information, i.e., managers are expected to reconcile the continued application of the heuristic with the perceived information discrepancy through unfavorable evaluations of information and even source derogation. Three 7-point likert items were used to measure respondents’ evaluation of the market information ("the external market information provided .... is believable / relevant / high quality/" (cf. Wilton and Myers 1986) and of the source of the information (reliable/useful).
Perceived information usefulness was measured with a single item. The coefficient alphas for both the scales are fairly high (0.76 and 0.90 respectively for the information and source scales); hence, responses were averaged across the two sets of items to form two evaluation scales. The resulting ANOVA indicates that managers perceived the information, on average, to be useful (mean: 4.7). However, belief-consistent information was rated more useful than belief-discrepant information (5.0 versus 4.4, p=0.001), providing support for H2a. Similarly, evaluations of discrepant information were less favorable than of consistent information (4.5 versus 4.9, p=0.002). An identical pattern was seen in the evaluation of the source (4.4 versus 4.9, p=0.013)\(^{51}\). Thus, H2b and H2c are also supported.

One possible rationalization for managers' decision is the consideration that Ourstore would be affected adversely by the price-differential in the long run. This assumption is seen to be a valid one. The case stated that six weeks had elapsed since Feisty's price-cut. Managers' estimated, regardless of the discrepancy manipulation, that it would take 12.9 weeks for the full impact of Feisty's price-cut to be realized; thus, whatever the level of market responsiveness described in the case, it was expected that further effects would be felt in the future because of the delay in pricing action\(^{52}\).

\(^{51}\) The Cronbach alpha increases to 0.85 when all four items are averaged to form an overall information evaluation scale. Since there are no differences in results, this is used henceforth as the index of information evaluation.

\(^{52}\) The range of estimates varied from one week to 'forever'; when the seven respondents coded as '99' were deleted, the average was still about nine weeks.
SOURCE OF MARKET INFORMATION

It is hypothesized that discrepant information can be more easily discounted if provided by a source which is considered to be less acceptable to begin with. Assuming that the newer scanner information source would be evaluated less favorably (cf. Capps et al. 1987) than the more familiar local market research agencies, the market information was described as having been provided from one of these sources. Thus, H3 proposes a source-discrepancy interaction such that if information is discrepant, information evaluations would be more negative when obtained from the scanner source than from the market research source. For belief-consistent information, the source should not matter.

The main analysis of variance reveals no support for this proposition. A closer look, however, shows that the assumption of differential a priori evaluations of the two sources is not a valid one. Managers rated the source equally favorably whether it was the scanner firm or the local market research firm. Therefore, H3 cannot be addressed with this manipulation.

The questionnaire does provide another means of addressing this prediction though. The descriptive measures in the pretest revealed that respondents who were accustomed to using scanner information in their firms evaluated it as more useful than those who were not. A similar pattern is seen in this study. Managers from firms that routinely use scanner information in general merchandising decisions rated it more favorably than those which do not (4.9 versus 3.0, p=0.0001). This effectively provides a post-hoc categorization of favorable versus unfavorable
evaluation of a particular source (scanner information). Consideration of H3 in this context implies that discrepant (scanner) information will be evaluated more negatively by low users than by high users, whereas both groups should evaluate belief-consistent information equally. This is supported in the data. Post hoc (Student Newman Keuls) contrasts (examining only those respondents in the scanner condition) show that information discrepancy did not affect information evaluations of high users, whereas it depressed evaluations provided by low users (p=0.0008).

It is interesting to note that there was a main effect of scanner data usage on information evaluation. Managers evaluated the information (4.9 versus 4.4, p=0.008) and the source\(^{53}\) (4.9 versus 4.3, p=0.002) more favorably if they were high users of scanner information than if they were low users. This suggests that such firms, perhaps because they are more "progressive" (cf. Capps et al. 1986) have a greater receptivity to market research in general. The scanner usage categorization affected the pricing decision as well. An ANOVA (again, using only respondents given the scanner source manipulation) reveals a similar pattern of effects. Greater price-reductions were recommended by high users than by low users (0.78 versus 0.70, p=0.07). There was also a marginally significant interaction (p=0.08). Post hoc tests reveal that this is because high users (who have a more favorable opinion of scanner data) recommended greater price-reductions when information indicated greater market response than when it revealed no impact (0.85 versus 0.63, p=0.006) whereas when information was discrepant, there was no effect.

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\(^{53}\) This is regardless of the source manipulation.
These results together indicate that when information is discrepant, it is evaluated more negatively by those who have an unfavorable opinion of the source from which it is obtained and ignored in decision-making. Those with greater familiarity with the source appear to consider the information more in decision-making. Thus, when information is discrepant, it is evaluated negatively, and even more so if it is from an unfamiliar source and ignored in the decision. When information is belief-consistent, its incorporation in decision-making depends on a priori evaluations of source (in this instance, indexed by familiarity with scanner information). This provides further insight into the nature of selective information use and indirect support for H3.

MARKET SHARE

It was proposed that to the extent that selective information use reflects risk-aversion by managers, its occurrence should be influenced by Ourstore’s market position. H4 states that discrepant market information would be evaluated more negatively and considered less in the pricing decision by a small firm compared to a more dominant one. In the condition where Ourstore has only 23% share (and Major has 40%), it is more vulnerable than when it has 40%; therefore, the reliance on the familiar price-heuristic should be greater in the former case.

The analysis reveals that the market share manipulation had no effects on the pricing decision. Nevertheless, 73/183 managers (40% of the sample) referred to Ourstore’s market position in their open-ended explanation of their
decision. Of these, most (67%) emphasized their concern that Ourstore stood to lose market share and price image by not responding immediately. Twenty-two percent acknowledged that Ourstore's greater share (in the 40% condition) afforded it some degree of moderation in its pricing response but emphasized that after six weeks, some price action was imperative. The remaining eight respondents (from the 23% condition) suggested that Ourstore's response could be muted till the dominant competitor "Major" decided a pricing response.

This perceived need for immediate action is obvious from another categorical measure questioning whether Ourstore should wait for Major to act before making its pricing decision. Eighty-nine percent of the sample felt that it should not wait. Not surprisingly, a higher proportion of these were in the condition with Ourstore as the dominant firm rather than Major (62.4% versus 37.6%, p=0.08). Thus, the data provide no support for the hypothesized "insulating" effect of a dominant market position. Regardless of market share, there seems to be a keen appreciation of a potential loss of share. However, it should be noted that the manipulation needs to be modified in order to study this effect more carefully. This is because, in both the market share conditions, Ourstore's market share (23% versus 40%) was still significantly higher than that of Feisty. A more appropriate manipulation would be to characterize Ourstore as the dominant firm in one condition and Feisty as the market leader in the other.
CHARACTERISTICS OF MANAGERS, ORGANIZATION

H5 and H6 address the effect of structural characteristics of the organization (degree of formalization or centralization) and the decision-maker's experience and subjective knowledge. Due to space limitations on the questionnaire, these variables were measured using single-item likert scales (contrast this with Deshpande and Zaltman 1982) embedded in a series of other scales, toward the end of the instrument. As a result, these are regarded as supplementary to the core analyses.

Formalization, Centralization

It was expected that managers in more formalized and centralized organizations would be more confident of their decision (and apply the heuristic more strongly) than those with a lower level of these variables. These were transformed into dichotomous measures and used in an analysis of variance. The results reveal that formalization (the extent to which there are set procedures for pricing) had no effect (mean: 4.2). Greater price-reductions were recommended by managers in more centralized organizations (Gap: 0.81 versus 0.71, p=0.04). This provides partial support for H5 and addresses an important issue: the degree to which an individual manager's decisions are driven by the organization's policies rather than by, or in addition to, market beliefs.

Experience was measured by number of years in pricing.
Experience, Expertise

Since beliefs are shaped to a large extent by experience, H6 posits that greater experience and higher subjective knowledge will lead to greater confidence and application of the heuristic. While perceived expertise did increase confidence (5.5 versus 6.3, p=0.002), it did not affect the actual decision; neither did experience. Thus, experience cannot be assumed to result automatically in greater expertise. An experience-discrepancy interaction (p=0.06) was found in the evaluation of information. Managers with less than 15 years' experience evaluated information more negatively if it was discrepant than if it was consistent (4.9 versus 4.2) while discrepancy did not affect the evaluations of more experienced managers. These results suggest that the heuristic is applied more automatically and confidently, and involves a lower consideration of information by more experienced managers (cf. Northcraft and Neale 1987).

Covariates

Finally, the correlations of certain variables with the pricing decision led to their inclusion as covariates in the analysis. These were (i) the number of weeks managers believed it would take for Ourstore to experience the full impact of Feisty's price reductions, (ii) the pricing strategy of the firm: EDLP versus Promotions pricing and (iii) the pricing goal: increase market share or profit. The only significant covariate was the 'weeks' variable (β=0.002, p=0.08) for the pricing of the most visible items. However, since the coefficient is almost zero and
its addition does not contribute beyond the pattern already observed, this is not pursued further.

ANCHORING BIAS

The results of the first exploratory study reveal that managers subscribe strongly to the belief that the market is "very" price sensitive but that they do not have a clear quantitative estimate of the magnitude of potential market response. In the present study, respondents were asked to provide their own estimates (range) of the "true" level of switching that would actually occur in the Anytown market following Feisty's price initiative based on their own experience. The analyses examined the data for the "anchoring" effect first seen in the pretest data as to whether different starting levels result in different estimates of market sensitivity which are biased toward the initial values provided in the case (cf. Kahneman, Slovic and Tversky 1982).

There is a clear anchoring bias in that the switching estimate provided as part of the discrepancy manipulation affected respondents' estimates. The average estimates ranged from 8.6% to 14.6%. These were, however, higher in the 20% condition than in the 2% condition for both the lower limit (12.5% versus

55

A comparison of this average range with that obtained from the pretest further illustrates this anchoring effect. The pretest attempted to manipulate discrepancy with switching levels that were higher than in the present study, namely, 7%, 30% and 45%. Managers' average estimates of the range of switching across the 3 conditions were, correspondingly, 8.3%, 20.9% and 23.9%.
4.1%, p=0.0001) and for the upper limit (20% versus 8.4%, p=0.0001). Managers expected a higher level of switching when the initial value they encountered in the case was high rather than low.

DESCRIPTION OF RESPONDING FIRMS

Pricing Practices

Managers described the pricing process and perceived conditions in their own markets. Approximately 25% of promotions and specials undertaken by managers in the present sample are initiated by the retailer (i.e., they are not manufacturer-supported\(^5\)). Of these retailer promotions, 40% are reported to be responses to competitors' price initiatives. Thus, the situation described in the Ourstore case appears to correspond to about 10% of "real-world" price promotions decisions.

The nature of the pricing process in the respondent's firm was examined through various 7-point scales. There appears to exist a mentoring system whereby the appropriate procedure is "taught" by more experienced executives to new pricing managers (mean: 4.6). Managers report being satisfied with the policies in place in their firm, i.e., they disagreed that change was required (mean: 3.4). Nevertheless, 48/183 respondents (26% of the sample) detailed several areas for

\(^{56}\)

Although the estimate varied from 0-100%, the distribution of responses indicates that the value was 30% or less for three-quarters of the sample.
improvement, in open-ended responses. The highest proportion of these (29.2%) pertained to a perceived need for greater (or quicker) responsiveness to competitors, with more extensive/frequent price checks. Another 25% emphasized the importance of adopting the opposite approach, by making pricing policy less instinctive or 'seat-of-the-pants' with a greater focus on strong gross margins through EDLP and different formats. The last major category (14.6%) of complaints pertained to the concentration of decision-making in regional headquarters with resulting prices not being tailored enough to specific stores.

Perceptions and Use of Information

The issue of information use is particularly relevant in the retail grocery market because of the new scanner technology. A detailed review of the use of scanner information in grocery decision-making is provided by Capps, Thomas and Long (1986). A report by Capps (1986) found that while the adoption of the 'hard benefits' of scanner technology (e.g., labor cost savings) was widespread, less than 10% of firms with scanning systems utilized its "soft" benefits (improved decision-making. The descriptive data from the present sample of a large mix of firms updates the previous reports. Only 31 firms (17%) do not have scanning systems. Of the remaining 150 firms, 71% (107 respondents; 59% of the sample) report that they use scanner information in a variety of applications.

Analysis reveals that managers with these opposing views did not differ in their pricing recommendations.
A Food Marketing Institute (1985) survey of 60 "progressive" companies working to develop various scanning applications found that among the potential applications, the most popular area of development was shelf-allocation (30%) followed by direct product profitability reports (15%), automatic reorder systems (10%) and merchandise exceptions (10%)\textsuperscript{58}. The corresponding estimates in the present larger and more representative national sample are summarized in Table 17. It echoes the same pattern except for the low percentage of firms indicating use of scanning in automatic reorder systems (3.8%). The present survey also included explicit measures of the application of scanner data to pricing decisions such as selecting items for promotion (45%) and deciding amount of price discount (30.6%). Due to space limitations, however, more detailed information on these applications was not obtained.

\textsuperscript{58} DPP matches movement of items to gross profit. Merchandise exceptions list items scanning at a price different from established headquarters' prices.
TABLE 17: USE OF SCANNER INFORMATION IN DECISION-MAKING

<table>
<thead>
<tr>
<th>APPLICATIONS OF SCANNER INFORMATION</th>
<th>SAMPLE FREQUENCY (%)</th>
<th>FMI (1985) ESTIMATES</th>
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<tbody>
<tr>
<td>a. Shelf-Allocation Operations</td>
<td>98/107 (53.6)</td>
<td>30%</td>
</tr>
<tr>
<td>b. Direct Product Profitability Report</td>
<td>39/107 (21.3)</td>
<td>15%</td>
</tr>
<tr>
<td>c. Automatic Reorder Systems</td>
<td>7/107 (3.8)</td>
<td>10%</td>
</tr>
<tr>
<td>d. Merchandise Exceptions</td>
<td>53/107 (29.0)</td>
<td>10%</td>
</tr>
<tr>
<td>e. Selecting Items for Promotion</td>
<td>82/107 (44.8)</td>
<td>--</td>
</tr>
<tr>
<td>f. Deciding Amount of Price Discount</td>
<td>56/107 (30.6)</td>
<td>--</td>
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</tbody>
</table>

LIMITATIONS

This study utilized a case scenario methodology (cf. Dickson and Urbany 1991; Keith, Jackson and Crosby 1990) which allows the application of experimental methods with a national mail sample of pricing managers. Despite this advantage, the adoption of this methodology involves several drawbacks.

Since a major concern expressed by potential respondents pertained to the time required to participate in the study, the decision scenario and the accompanying questionnaire were kept as short as possible. Accordingly, the case is very simple, requiring managers to price nine items (instead of the hundreds to
which they may be accustomed). Similarly, the 'market information' provided in the case was minimal (see Appendix B). However, given that one of the core problems with information use in this industry is the provision of too much information in hard-to-follow formats (Capps, Thomas and Long 1986), this characteristic of the case information should, if anything, have facilitated information use. It is reassuring that respondents considered the case to be realistic, representing a 'typical' situation. Moreover, managers appear to have taken the task seriously. All but one of the returned questionnaires were complete. In addition, the majority of the sample completed the various open-ended sections. Ninety-two percent provided an explanation of their pricing decision and 96% evaluated Tom's decision.

The measurement concerns due to restrictions on the length of the questionnaire are not so easily dismissed. Most constructs and variables were measured by single-item scales, grouped in sets in the instrument including such complex and key variables as managers' confidence in their market beliefs and in their decision, perceived information usefulness, subjective knowledge and the organizational structural variables. Previous research indicates that considerably more precision and detail can be exercised in the measurement of these variables (cf. Wilton and Myers 1986; John, Scott and Bettman 1986; Deshpande and Zaltman 1982). More detailed and refined measures would also have permitted the application of analytical techniques that are appropriate to the study of the postulated causal processes such as covariance structure modeling.
Better manipulations of all the between-subject factors would also have been more helpful. A stronger discrepancy manipulation is difficult because of the observed anchoring effects. The study is unable to address the role of market position and a priori source evaluations more definitively because of the problems identified in the manipulations of these two factors.

The results support the proposed formulation in a very specific decision-context in a particular industry. Without a better understanding of how various structural characteristics of the market and of the organization influence belief formation and information use, it is unclear how generalizable these findings are to other decision-settings.

CONCLUSIONS

This study provides a preliminary investigation of the potential effects of managers' market beliefs on their use of information in decision-making. It represents an advance over the previous work in managerial decision-making because it identifies specific market beliefs which are postulated in information-economic theory to be relevant in pricing in imperfectly-competitive markets, links these to an observed pricing practice in a specific market and examines how they affect managers' evaluation and use of available market information. The data represent valuable empirical evidence on the nature and effects of market beliefs, in a fairly large sample of actual decision-makers. It goes beyond traditional survey techniques by incorporating experimental manipulations in a decision-scenario.
The results generally support the proposed model. Managers decide price based on the prevalent visible-item heuristic. Information that could potentially update beliefs is largely ignored and referred to only when it can support/reinforce their decision (as evidenced in the discrepancy-visibility interaction) or discounted (as seen in the information/source evaluation). The anchoring bias in this data provides converging evidence about managers' suggestibility as to the true level of a parameter about which they hold beliefs with a high degree of confidence. This indicates the need for reassessing descriptive pricing models which are typically parameterized precisely in terms of demand sensitivity.
CHAPTER VIII

CONTRIBUTIONS OF DISSERTATION, ISSUES FOR FUTURE RESEARCH:

GENERAL DISCUSSION

ACADEMIC RESEARCH IN MANAGERIAL (PRICING) DECISION-MAKING

The dissertation studies represent some of the initial research in the field, on "market beliefs," especially in a managerial context. The first study of the dissertation provides empirical insight into the nature and existence of specific market beliefs which are postulated in information economics to influence price-determination in imperfectly-competitive markets (Phlips 1988). While managers are seen to hold relevant market beliefs about consumer and competitor behavior, these beliefs may be neither precise nor accurate (cf. Urbany, Dickson and Key 1990). This is in contrast to the typical economic assumption of perfect informedness. The second experimental study connects prevalent market beliefs to a standard decision heuristic which dominates the routine pricing decision in the retail grocery market. It also demonstrates managers' selective use of available market information, i.e., their tendency to use belief-consistent information and to ignore and devalue belief-discrepant information. This implies that decision-makers' beliefs about their
market may not be updated according to changing market conditions leading to prices which are not optimal.

This research also provides insight into the nature of grocery managers' beliefs about market price sensitivity and the importance of competitive price-matching tactics. Together with a series of previous studies (Little and Shapiro 1980; Blattberg et al. 1981; Boynton et al. 1983; Urbany, Dickson and Key 1990; Dickson and Urbany 1991), the results from this study indicate that retail grocery decision-makers have exaggerated perceptions about the degree of consumer awareness and responsiveness to between-store price differentials. This leads to a reliance on aggressive competitive pricing tactics which may be of dubious effectiveness with respect to improvements in market share or profitability (cf. Eliashberg and Chatterjee 1985). It is seen that even for the least visible category of items (including such items as Vlasic Pitted Olives and Dixie Bathroom Cups), the recommendation of managers was, on average, to reduce prices significantly (gap mean: 0.57). Further, since at least a partial objective of price "specials" is to generate new traffic to the store, it is of particular interest to consider the recent evidence that such a pattern of pricing may actually create greater price sensitivity among the firm's primary consumers (e.g., Urbany et al. 1992; Krishna et al. 1991; Grover and Srinivasan 1992).
The dissertation contributes to theory development in marketing by identifying "market beliefs" as a construct that has a legitimate and important role in managerial decision-making. This cognitive approach leads to a more appropriate characterization of decision-maker "informedness" for descriptive and explanatory purposes than the normative assumption of automatic and accurate integration of current market information in decision-making. The focus on managers' inadequate consideration of market information relative to their prior market beliefs shifts the emphasis in research on managerial decision processes from information availability to information utilization, thereby building on the small but growing stream of research in this area (e.g., Deshpande and Zaltman 1982, 1984; Lee, Acito and Day 1987; Narayanan and Lehmann 1992). Effectively therefore, the dissertation addresses the call for developing descriptive marketing models which have a process focus (e.g., Day and Wensley 1983; Weitz 1985). By drawing on research from human judgment and perception, social cognition and organizational behavior, the dissertation research permits a better understanding of pricing practice than afforded by the almost-exclusive reliance on the microeconomic paradigm.

Although there has been a greater research emphasis on this cognitive approach to managerial decision-making in the organizational behavior literature than in marketing, the central issues addressed in the dissertation are those which have been identified by these researchers as well as requiring further conceptual and empirical development (Walsh 1990). There has been little research, prior to the present work, which has directly identified or measured specific beliefs
in a particular decision context and demonstrated their influence on the decision process (including effects on information utilization) and on the final decision.

The empirical contribution of the second study is further notable for the nature of the sample. Participants comprised a large national sample (n=183) of actual managers who were verified to have "primary responsibility" for pricing decisions in their market. The methodology employed (based on Dickson and Urbany 1991) goes beyond traditional survey techniques by incorporating experimental manipulations in a decision-scenario.

SUGGESTED PREMISES FOR DESCRIPTIVE / EXPLANATORY MODELS

Overall, the dissertation provides an interdisciplinary basis for formulating descriptive and explanatory models of marketing decision-making, especially of pricing. It questions the adequacy of normative models which are parameterized precisely in terms of immediate and accurate responsiveness of tactics (pricing) to changes in the environment (price sensitivity). It proposes a recasting of the price-setter as a managerial decision-maker than as a "firm" and a reconsideration of the decision process as influenced by the manager's market beliefs. Thus, the major premises suggested by the present research are as follows:

- Managers' market beliefs reflect their informedness in pricing decisions as much as (or more than) external market research information.

- Market beliefs are not precise: they reflect a perception of general direction rather than specific magnitude, and vary greatly, even within a "firm."
Market beliefs are not necessarily accurate: the resulting price decisions may not be a satisfactory approximation of the optimal process implied in normative models.

Market beliefs affect the evaluation and use of market information in routine pricing decisions: there may be a systematic bias such that beliefs are not updated with available market information.

MANAGERIAL IMPLICATIONS

The findings from the dissertation studies address issues of direct relevance to pricing decision-making in the retail grocery industry. Routine pricing decisions are seen to be driven by the visible-item heuristic, with little consideration of information on current market conditions. The great variation in beliefs among managers within a firm and the discrepancies between managers' estimates of consumer behavior and consumers' self-reports are also cause for concern. The high level of competitive reactivity in this industry makes it important for organizations to be aware of biased information use, particularly when beliefs may be inaccurate, and to recognize superior informedness in decision-making as a potential source of competitive advantage (Barabba and Zaltman 1991). The organization can provide quality data to managers (such as made available from scanner sources) in usable format to improve their understanding of the market and lead to greater convergence in their market beliefs. In general, the status accorded the collection and dissemination of marketing research in the organization is an important factor affecting managers' receptivity to novel information (Huberman 1987).
These common-sense recommendations follow directly from the findings of the study. Nevertheless, implementing them to improve the pricing decision process may be less than straightforward as suggested by a consideration of early studies of retail grocery pricing. For instance, as early as 1960, Holdren noted the tendency for inefficiencies to persist in this market. Similarly, a study of pricing practices in this industry by Preston (1963) observed the effects of general rules of thumb in price-determination. He suggested that it was essential for firms to recognize the range of pricing choices available in a competitive situation by developing "...a price structure and product assortment that enable it to maintain its place in the market without uniformly matching prices" (p. 71). The following excerpt reveals that the basic issues raised in the dissertation are those that have remained unaddressed for nearly 3 decades:

"...Such rules are valid so long as the cost and demand conditions from which they are derived continue. However, with changes in cost, competitive pressures and demand conditions over time, actual prices tend to become the results of an unrelated sequence of historic decisions and chance events that may have little connection with desirable price structures. At a minimum, it would appear that a periodic appraisal of prices ...would be an important first step toward improved retail store management." (p. 71)

Nevertheless, there are indications that a more serious consideration of these issues would be timely. In contrast to earlier reports (Capps 1986; Capps, Thomas and Long 1986), the descriptive results in this study provide an encouraging account of the general acceptance of scanner information in grocery merchandising decisions and of managers' perceptions of its potential usefulness in such applications. Moreover, the data suggest that firms which report high scanner
data usage tend to be more favorable toward research information in general. A significant albeit small segment of managers also applauded the restraint in pricing shown by the pricing manager of Ourstore in the case. Another minority of respondents also opposed the dominant perspective in describing necessary changes in price-determination, i.e., they recommended that pricing be made more scientific and systematic rather than in the current "seat-of-the-pants" mode. This trend is further reflected in the heightened interest of professional institutions such as the Marketing Science Institute (1990) and the Food Marketing Institute (1985) in increasing the use of market information.

It is important to institutionalize periodic evaluations of prevalent assumptions in order to have more effective pricing. The characterization of item "visibility" is based (as seen in the pretest) primarily on membership in certain categories (e.g., fresh produce) and, to a lesser extent, on the dominance of a brand within a particular category (e.g., Palmolive, among brands of dishwashing liquid). Careful consideration of item movement, as is already being done by some firms, can lead to better selection of items on "special." Moreover, an examination of the responsiveness to lower prices of the store's own shoppers relative to the sought-after "new traffic" can enable a more critical assessment (cf. Blattberg et al. 1981) of the efficacy of price promotion dollars relative to advertising budgets, point-of-purchase displays and other alternatives. It can facilitate the quantification of vague beliefs about the market and thus complement more traditional types of information such as surveys of shopping behavior and consumer price-image of various stores.
While these findings and recommendations are drawn from an analysis of retail grocery pricing, the fundamental role of market beliefs and associated information biases in routine decision-making are expected to be relevant in other decision situations as well. The extent of this generalizability may, however, be limited by various characteristics of the decision task, of the decision-maker and of the decision-environment. These and other factors are discussed in the next section.

ISSUES FOR FUTURE RESEARCH

The most obvious areas for future research efforts are identified in the limitations of the studies described in Chapters III and VII. Replication of the findings in different decision-settings is required with improved measures of the various constructs, especially of information use (e.g., Wilton and Myers 1986). For example, the present study focuses on the 'instrumental' use of information in that it assesses whether market information is directly reflected in the decision. Information use in organizations, however, may also be more "conceptual" - an indirect, gradual integration in decision-making (see Larsen 1982). Similarly, these effects are likely to be more powerful in a controlled decision-setting in which factors such as framing effects on information use and final decisions (Tversky and Kahneman 1982) can be considered. An examination of these issues through a computer pricing-decision task (with software applications such as MOUSELAB - John et al. 1986) would also permit a more detailed monitoring of information
choice and utilization in arriving at the final decision. This could lead to better insights into the actual decision process than obtained in the present study. Moreover, increased precision in measurement can facilitate a better evaluation of belief "accuracy" and decision 'optimality' by contrasting for example, observed integration of novel information with prior beliefs against a Bayesian yardstick.

The dissertation acknowledges the bases of market beliefs in individual experience and organizational characteristics but it does not examine these factors in depth. The observed effect of market beliefs on information use and decision-making, together with the preliminary, promising evidence about the role of organizational formalization and manager expertise makes it important to focus on the origin of such beliefs at the individual and organizational level, in a more systematic manner.

While there is a broad conceptual basis for the influence of managerial experience and expertise in the formation of knowledge structures and application of heuristics (see Sherman and Corty 1984; Walsh 1990), it is not clear whether and under what conditions experience improves routine decision-making. For example, Narayanan and Lehmann (1992) speculate that the benefits of greater experience arise because "... working in organizations teaches people to rely on data more than on their prior beliefs, by making them aware of the fallibility of their beliefs" (p. 28). The dissertation study and previous research (cf. Northcraft and Neale 1987) suggest that while greater experience increases confidence in decisions, it does not ensure immunity from bias or better utilization of information. This
study also cautions against equating greater experience with expertise. These differences in findings may be due to differences in the characteristics of the decision task, e.g., unfamiliar versus routine decisions (cf. Perkins and Rao 1991). Emphasis should be placed in further understanding these effects and on delineating the underlying factors.

There is tremendous potential (and need) for research on organizational level belief-structures ("supra-individual" knowledge structures; Walsh 1990). Studies in organizational behavior (e.g., Pfeffer and Salancik 1978; Ashforth and Fried 1988) and in marketing (Deshpande and Zaltman 1982; Barabba and Zaltman 1991) are useful in identifying socialization processes and relevant structural characteristics of the information and decision environments that influence decision-making. These links and the influence of the manager's unique perceptions relative to organizational structure on expressions of "market beliefs" need to be addressed with more direct empirical evidence. Moreover, there is little empirical research on the functional versus dysfunctional aspects of routinization in organizational decision-making.

Finally, the causes for the occurrence of selective information use need to be examined in the managerial decision-making context. Samuelson and Zeckhauser (1988) suggest that a preference for the status quo may have a "rational" explanation if the costs of change are perceived to exceed gains. It may also lie in perceived psychological sunk costs in the decision, simple inertia (e.g., Miller and Friesen 1984), habit or policy. It is important to understand the degree to which
managers discount discrepant information because it represents a contradiction of prior knowledge (Pyszczynski et al. 1985) relative to factors such as preservation of self-esteem (Kunda 1990) or authority (Newman 1962), or whether selective information use is caused by differences in perceived information usefulness between research providers and users (Deshpande and Zaltman 1984). Thus, while the dissertation research contributes to a better understanding of the role of managerial beliefs in decision-making, it identifies several important areas worthy of future attention in a program of research.
EXHIBIT I: QUESTIONNAIRE

* Please list the top three reasons why you think Columbus grocery shoppers shop at each of the following stores:

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<td>Meijer</td>
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<tr>
<td>Cub Foods</td>
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* We would like your judgments on how you think Columbus grocery shoppers behave in general:

- What percentage do you think shop at one supermarket all of the time? __ __ __
- What percentage do you think shop at one supermarket almost all of the time but sometimes shop another supermarket? __ __ __
- What percentage do you think regularly shop two or more supermarkets? __ __ __

* What percentage of shoppers do you think regularly shop the specials at different supermarkets? __ __ __

* What percentage of Columbus shoppers do you think regularly:

- Buy more than the usual amount when an item they regularly buy is on special? __ __ __
- Talk to friends about the specials before doing their weekly grocery shopping? __ __ __
- Scan the shelves to see what brands are on special? __ __ __
- Budget a certain amount to spend on groceries each week? __ __ __

* Each week grocery stores advertise weekly specials in fliers, the Columbus Dispatch and suburban newspapers. What percentage of shoppers do you think even read these ads or fliers? __ __ __

* What percentage do you think normally read the ads/fliers of:

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<th>Store</th>
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<td>Kroger</td>
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</tbody>
</table>

* What percentage do you think compare the specific prices of grocery stores:

- Weekly __ __ __
- Monthly __ __ __
- Less Often __ __ __
- Never __ __ __

* What items do you think are used most often to compare prices?

1. __ __ __
2. __ __ __
3. __ __ __
Instructions: Please indicate how much you agree or disagree with each of the following statements:

SA indicates you STRONGLY AGREE with the statement
A indicates you AGREE with the statement
O indicates you are UNDECIDED, NEITHER AGREE NOR DISAGREE
D indicates you DISAGREE with the statement
SD indicates you STRONGLY DISAGREE with the statement

1. - A lot of shoppers compare the prices of different stores
   - Most grocery shoppers compare the prices of fruit and vegetables at two
     or more grocery stores
     * Most grocery shoppers shop the specials of different stores

2. - Columbus grocery stores compete a lot on price
   - There is a lot of price competition between local grocery stores
   - Columbus grocery stores do a lot of price advertising
   - Columbus grocery stores offer a lot of specials

3. - A cart full of the same groceries bought from each of the local grocery stores
     will cost about the same
     - Prices of individual items may vary between stores, but overall, there isn't much difference in the prices between Columbus grocery stores
     - Some grocery stores in Columbus have a lot lower prices than others

4. - The price of meats and produce varies a lot between Columbus grocery stores

5. - The quality of meats and produce varies a lot between Columbus grocery stores

6. - The price of individual items often varies a lot between stores
     * Different grocery stores seldom have price specials on the same items at the same time

7. - Grocery stores are more price competitive if a lot of shoppers compare prices between stores
     - Grocery stores are less price competitive if only a few shoppers compare prices between stores
     - When grocery shoppers do not compare prices between stores very much, some grocery stores will have generally higher prices than others

9. - When grocery stores compete a lot on price, a cart full of the same groceries bought from each grocery store will cost about the same
     - When price competition is not very great, some grocery stores will have higher prices than other grocery stores
     * When grocery stores compete a lot on price, all of the stores' prices end up being lower

10. - When two grocery stores get into a price war, they cut price on different items
     - When grocery stores compete a lot on price, the price of individual items will vary a lot between stores

11. - Grocery stores that advertise a lot have lower prices

12. - Grocery stores that advertise a lot have lower prices on the items that they feature in their advertising

13. - Grocery stores that advertise a lot have higher prices on the items that they do not feature in their advertising

14. - Grocery stores that advertise a lot sell better quality meat and produce

Note: '*' signifies that the item was deleted in analysis due to poor coefficient alphas.
APPENDIX B

EXPERIMENTAL STUDY: THE OURSTORE CASE AND QUESTIONNAIRE
GROCERY PRICING - THE OURSTORE COMPANY CASE

(This case study is based upon a recent situation faced by a grocery chain in an actual market. The store and city names have been disguised; facts are presented briefly to keep the case simple and to make the important facts clear).

Tom Evans is the marketing area vice-president of the OURSTORE company, a retail grocery chain. He is currently faced with the company’s pricing and advertising decisions for the coming week (the week of May 18, 1992) in the Anytown market (population 800,000). OURSTORE’s retail stores in Anytown are primarily superstore format, averaging 35,000 square feet. Tom must decide how to respond to the following changes in the competitive environment.

OURSTORE has traditionally been the market share leader in the Anytown market. OURSTORE’s most important competitor in Anytown is the MAJOR company, a large national chain. Both OURSTORE and MAJOR stores are full-service operations. Two other full-service chains in the market are the FEISTY company and the MIDSIZE company. The latest market share figures (obtained from a research report dated February 11, 1992) are as follows:

<table>
<thead>
<tr>
<th>Chain</th>
<th>Number of Stores</th>
<th>Share of the Anytown market (based on total $ volume)</th>
<th>Market - Share Manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OURSTORE</td>
<td>25</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>MAJOR</td>
<td>16</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>MIDSIZE</td>
<td>16</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>FEISTY</td>
<td>6</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>All Others</td>
<td>-</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

The New Competitive Environment. On April 6, 1992, the FEISTY chain (with 6 stores and a 10% market share in Anytown) lowered the normal prices of several products. It also initiated an extensive promotional campaign, emphasizing its low prices in all its print advertising. Faced with this competitive price initiative, Tom decided to adopt a ‘wait-and-see’ strategy with a plan to review the situation after six weeks. OURSTORE’s immediate response (week of April 13), at Tom’s suggestion, was to initiate an aggressive ad campaign emphasizing the overall image and quality of all its stores. Tom also commissioned a market study of consumer reactions to the new prices in the market from a Scanner information service firm at a cost to OURSTORE of approximately $10,000.

The Price Decision Task. Six weeks have elapsed and Tom is faced with the task of reconsidering the pricing strategy for OURSTORE based upon all the information that has now become available. He must decide whether or not to respond to FEISTY’s low prices for a basket of 9 items, for the week beginning May 18. Tom’s decision will be influenced by his evaluation of the current market situation, based on his extensive experience in similar situations in the past and on the market research information that is now available. A summary of the research information is provided on page 3.

Comparative Prices. OURSTORE routinely conducts price surveys of its major competitors in the market. Excerpts from price surveys taken on February 11, 1991 (two months before FEISTY’s price cuts) and on May 11, 1992 (five weeks after FEISTY’s price cuts) are reproduced in the following table. Note that the surveys show that while the MAJOR company (16 stores, 23% market share) has not lowered its prices significantly to meet FEISTY’s new prices, the MIDSIZE company (16 stores, 22% market share) has decided to respond to FEISTY’s price campaign by lowering its own prices.
Price Survey of Anytown Market: Selected Products Carried by the Main Competitors

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>February 11, 1992 PRICES1</th>
<th>May 11, 1992 PRICES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oursstore</td>
<td>Oursstore</td>
</tr>
<tr>
<td>Banana (1 lb.)</td>
<td>0.49</td>
<td>0.49</td>
</tr>
<tr>
<td>Ground Beef (price per lb)</td>
<td>1.97</td>
<td>1.97</td>
</tr>
<tr>
<td>2% Milk (1 gallon plastic)</td>
<td>2.09</td>
<td>2.09</td>
</tr>
<tr>
<td>Post Toasties Cereal (18 oz.)</td>
<td>1.99</td>
<td>1.99</td>
</tr>
<tr>
<td>Hills Coffee (13 oz.)</td>
<td>1.99</td>
<td>1.99</td>
</tr>
<tr>
<td>Northern Bathroom Tissue (4 roll)</td>
<td>1.09</td>
<td>1.09</td>
</tr>
<tr>
<td>Vlassic Large Pitted Black Olives (6 oz.)</td>
<td>1.79</td>
<td>1.79</td>
</tr>
<tr>
<td>Joy dishwashing liquid (32 oz.)</td>
<td>2.39</td>
<td>2.27</td>
</tr>
<tr>
<td>Dixie Bathroom Cups (100 count)</td>
<td>1.39</td>
<td>1.39</td>
</tr>
</tbody>
</table>

What should Tom do? The accompanying questionnaire asks you to make specific recommendations to Tom about OURSTORE's pricing of the basket of items featured by the competitor, relying on your own experience and/or the information on the next page. Please answer these questions now.

---

1 For February 11, 1992, only the prices of OURSTORE have been provided, because the prices of all 4 stores were nearly equal (no more than a few pennies' difference).
MARKET INFORMATION (Anytown Market: May 1992)

Market Response. Tom was provided a report on market response to the changed competitive situation from two sources. The first is based on OURSTORE's internal sales records, and provides summary data on the company's change in sales for each item, during the period following FEISTY's price cuts. The relevant items and the corresponding sales information are shown below:

A. Item Sales Information (Company Records)

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>CHANGE IN SALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas (1 lb.)</td>
<td>0%</td>
</tr>
<tr>
<td>Ground Beef (1 lb.)</td>
<td>-2%</td>
</tr>
<tr>
<td>2% Milk (1 gallon plastic)</td>
<td>+2%</td>
</tr>
<tr>
<td>Post Toasties Cereal (18 oz.)</td>
<td>+1%</td>
</tr>
<tr>
<td>Hill's Coffee (13 oz.)</td>
<td>-3%</td>
</tr>
<tr>
<td>Northern Bathroom Tissue (4 roll)</td>
<td>-1%</td>
</tr>
<tr>
<td>Vlasic Large Pitted Black Olives (6 oz.)</td>
<td>0%</td>
</tr>
<tr>
<td>Joy Dishwashing Liquid (32 oz.)</td>
<td>-1%</td>
</tr>
<tr>
<td>Dixie Bathroom Cups (100 count)</td>
<td>+1%</td>
</tr>
</tbody>
</table>

The second source of information on market response is obtained from a report commissioned by OURSTORE from a UPC scanner service firm. This agency provided data on the behavioral responses of consumers in their local panel during the five weeks following the price-cut. The main statistics in the report, obtained from scanner data, are noted below:

B. Overall Change in Store Sales (Information from scanner data: Scanner Service Firm)

<table>
<thead>
<tr>
<th>STORES</th>
<th>% INCREASE IN SALES (COMPAARED TO NORM FOR LAST PERIOD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OURSTORE</td>
<td>+1% -2%</td>
</tr>
<tr>
<td>MAJOR</td>
<td>-2% -4%</td>
</tr>
<tr>
<td>MIDSIZE</td>
<td>+1% +3%</td>
</tr>
<tr>
<td>FEISTY</td>
<td>+3% +5%</td>
</tr>
</tbody>
</table>

C. Relative Impact (Information from scanner data: Scanner Service Firm)

Percentage of consumers who still primarily shop at OURSTORE, but have switched to FEISTY and MIDSIZE during the past 5 weeks and purchased their specials:

\[2\%][20\%]\n
Change in Ourstore's market share from the last period:

\[0\%][2\%]\n
QUESTIONNAIRE

Please read and answer each question carefully. Your professional expertise and good judgment are critical to the quality of our findings.

1. THE OURSTORE CASE

A. The Pricing Decision:

1. Using the information from the case and the unit cost information below, please write in the specific prices which you would recommend to Tom for the week of May 18, 1992, for the following items.

<table>
<thead>
<tr>
<th>Item</th>
<th>OURSTORE'S Current Price</th>
<th>FEISTY'S New Price</th>
<th>OURSTORE'S Wholesale cost</th>
<th>Your recommended retail price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas (1 lb)</td>
<td>0.49</td>
<td>0.39</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>Ground Beef (1 lb)</td>
<td>1.97</td>
<td>1.47</td>
<td>1.69</td>
<td></td>
</tr>
<tr>
<td>2% Milk (1 gallon plastic)</td>
<td>2.09</td>
<td>1.69</td>
<td>1.78</td>
<td></td>
</tr>
<tr>
<td>Post Toasties Cereal (18 oz.)</td>
<td>1.99</td>
<td>1.69</td>
<td>1.78</td>
<td></td>
</tr>
<tr>
<td>Hill's Coffee (13 oz)</td>
<td>1.95</td>
<td>1.67</td>
<td>1.59</td>
<td></td>
</tr>
<tr>
<td>Northern (4 roll)</td>
<td>1.02</td>
<td>0.89</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>Vlasic Black Olives (6 oz.)</td>
<td>1.72</td>
<td>1.49</td>
<td>1.49</td>
<td></td>
</tr>
<tr>
<td>Joy Dishwashing Liquid (32 oz)</td>
<td>2.27</td>
<td>1.89</td>
<td>1.65</td>
<td></td>
</tr>
<tr>
<td>Dixie Bathroom Cups (100 count)</td>
<td>1.39</td>
<td>0.99</td>
<td>0.91</td>
<td></td>
</tr>
</tbody>
</table>

2. How confident are you that you have made the right judgment about the prices you recommended above? (Please circle one).

   Not very confident 1 2 3 4 5 6 7 Extremely confident

3. Please explain briefly the reasons for the prices that you recommended above. For example, if you recommended using different tactics for different products, or used standard decision-practices, please explain.

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

4. How would you evaluate Tom's initial decision not to match FEISTY's price cuts immediately? Please comment.

   ______________________________________________________

B. Customer Response in the Anytown Market:

1. Please circle the appropriate number indicating your agreement with each of the following statements about the Anytown consumer's response to Feisty's price initiative.

<table>
<thead>
<tr>
<th>OURSTORE'S customers have noticed that its prices for the basket of items are higher than competitors' prices.</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OURSTORE'S price-image has been hurt by its failure to match FEISTY's prices immediately.</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FEISTY's new strategy is stealing away a lot of OURSTORE's customers.</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
C. Market Information in the Ourstore Case:
1. To what degree was your pricing decision based on (a) your pricing experience in similar situations or (b) the specific customer-response information provided in the case? Please provide an estimate.
   a. _______%: My Own Experience  b. _______%: Information Provided in the Case (these should add to 100%)

2. The market information from the external research agency indicates whether Feisty’s price initiative has affected customers’ shopping between stores and Ourstore’s sales. How consistent are these results with what you would expect in similar situations, based on your own experience? Is the reported impact more, less, or just about what you would expect? Please circle one.
   a. Just about what I'd expect  b. Greater than I'd expect  c. Lower than what I'd expect

3. The market research estimate is that 20% of Ourstore’s customers started to shop Feisty’s specials. This is based on a sample of consumers in the market, rather than on the entire market. In your opinion, how close is this estimate to the true percentage of those who still primarily shop at Ourstore, but have switched to Feisty and Midsize during the past 5 weeks, to purchase their specials?

   The true percentage of switchers was probably between ____% (lower estimate) and ____% (higher estimate)

4. Based on what you would expect from your own experience, how would you evaluate the external market information provided Tom? Please respond to the following scales by circling the appropriate number.

   The external market information provided by the scanner agency is:
   i. Not very Believable  1  2  3  4  5  6  7 Extremely Believable
   ii. Not Relevant at all  1  2  3  4  5  6  7 Extremely Relevant
   iii. Extremely Poor Quality  1  2  3  4  5  6  7 Extremely High Quality
   iv. Not very Useful  1  2  3  4  5  6  7 Extremely Useful

   The source of the external market information (the scanner agency) is:
   v. Not very Reliable  1  2  3  4  5  6  7 Extremely Reliable
   vi. Not very Useful  1  2  3  4  5  6  7 Extremely Useful

5. What additional information would have further helped you make your pricing decision?

D. Product and Market Factors:
1. Certain items are considered to be “visible,” i.e., they signal the price-image of a supermarket. The basket of items for which Tom has to decide prices is listed below. Please circle all of the items in this list which you consider to be visible, i.e., that you believe shoppers often use to compare prices between stores.

   f. Northern Tissue  g. Vlasic Black Olives  h. Joy Dishwashing  i. Dixie Bathroom Cups
2. How many weeks in total do you think it will take for OURSTORE to experience the full impact of FEISTY's current price reductions? ___________________ weeks after the price reductions were made.

3. Do you think that OURSTORE should wait and see whether MAJOR lowers its prices before taking any pricing action? (Please check one)
   Yes __________ No __________

E. The Realism of the Anytown Market Case
1. Does the case describe a realistic situation in the retail grocery industry? Please indicate your opinion by circling the appropriate number.

   | Strongly | Strongly |
   | Disagree | Agree    |
   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | I. The Anytown market is typical of many retail grocery markets today. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | II. The market situation described in the case is realistic. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

II. YOUR OWN MARKET
A. Routine Pricing Decisions:
1. What percentage of your weekly price-specials are "your own" promotions, i.e., those that are not supported by manufacturer incentives? %

2. Of your own (i.e., not manufacturer-supported) weekly price-specials, what percentage are usually responses to competitor price-initiatives versus new price initiatives your firm is making?
   a. Response to competitors %
   b. Your own initiative % (these should add to 100%)

3. When high-turn items are discounted by a competitor in your market, what is your usual competitive response?
   a. lower price of same high-turn item
   b. lower price of some other high-turn item
   c. lower price of another item in the same category
   d. take no price action: wait and see
   e. other (please describe): ____________________________________________________________________

4. Please describe the nature of your routine pricing decision tasks by responding to the following statements.

   | Strongly | Strongly |
   | Disagree | Agree    |
   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | I. We have strict operational procedures to follow in changing our prices. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | II. The appropriate pricing response is prescribed by company policy. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | III. Experienced managers teach company pricing procedures to inexperienced, younger managers. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | IV. Each week's pricing decision is very involving and requires much effort. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | V. Each decision involves detailed use of all available information. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   | VI. I feel pressured in my weekly decision-making because each decision has significant repercussions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5. Do you consider the competitive pricing tactics currently used in your company to be satisfactory? Please indicate the degree to which you perceive the need for any change in these practices.

   | No Change at All | 1 | 2 | 3 | 4 | 5 | 6 | 7 | A Great Deal of Change |

   If you perceive a need for change, please explain__________________________________________

B. Scanner Data Usage in Your Company:
1. Please circle the statement that best describes whether you use scanner information in your firm.
   a. We do not have scanner-based checkouts
   b. We do not use scanner data directly in merchandising decisions
   c. We use scanner data in merchandising decisions
If you do use scanner information in merchandising decisions, please indicate the ways in which you do so, by circling all the options from the following list that apply to your firm:

- a. Shelf-allocation operations
- b. Direct Product Profit Report
- c. Automatic Reorder Systems
- d. Merchandise Exceptions
- e. Deciding which items to promote
- f. Deciding amount of price-reductions based on estimated market price sensitivity
- g. Other (please explain) ____________________________________________________________________________

2. How useful is UPC scanner information in your display, shelf-space and other merchandising decisions?
   Not at all Useful 1 2 3 4 5 6 7 Extremely Useful

3. How useful is UPC scanner data in deciding the amount of price-reductions and choosing items for promotion?
   Not at all Useful 1 2 3 4 5 6 7 Extremely Useful

C. General Perceptions about Retail Grocery Markets
   1. Please indicate how much you agree with each of the following statements by circling the appropriate number in addition, please indicate how confident you are about each opinion, by writing a number between 1 and 7 in the last column (1 = not at all confident; 7 = extremely confident).

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
<th>Confidence in Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Consumers' impressions about the price-image of a store are based on the prices of a few visible items</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II. Shoppers are aware of the prices of frequently-purchased items</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III. Most consumers are sensitive to changes in the price of frequently-purchased items between different stores</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV. Most consumers shop the price specials of different stores</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V. My local grocery market is very price competitive</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI. When grocery stores compete a lot on price, a cart full of the same groceries bought from each store will cost about the same</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. COMPANY AND RESPONDENT CHARACTERISTICS
   A. 1. How would you describe the pricing strategy of your firm? (please check one)
        EDLP _____ Promotion Pricing (Regular pricing and frequent specials) _____
   2. Which best describes the current pricing goal of your firm? (please check one)
        a. Generally, we try to build market share for our firm even if it is at the expense of current profits ______
        b. Generally, we try to hold current share and increase current profits for our firm _____
   3. Market share of your firm? (in your regional market) _____%
   4. Price Leader in the market? Yes _____ No ______
   5. Zip code of firm ______

B. 1. How knowledgeable do you perceive yourself to be about making pricing decisions in the supermarket industry? (please circle one)
        Not at all 1 2 3 4 5 6 7 Extremely Knowledgeable
   2. Years of experience setting grocery prices for your current firm and any previous firms: _____ years
   3. Number of stores for which you set prices: _____ stores

THANK YOU VERY MUCH FOR YOUR PARTICIPATION
APPENDIX C

CODING SCHEME: EXPERIMENTAL STUDY


CODE FOR OPEN-ENDED QUESTIONS

A: Pricing Recommendation; Based on Heuristic?
1. Do not lower prices
2. Match visible items; lower others, or not at all
3. Based decision on reported sales volume effects
4. Consumers remember prices of visible items better
5. Need to lower prices of certain items to maintain store image; expensive to lose customers
6. Match all prices.

B. Market Share Considerations
1. Ourstore is market leader (or greater share than Feisty); drop prices to maintain share, price image
2. Ourstore is market leader (or greater share than Feisty); dropping prices will not hurt its profits
3. Ourstore is market leader (or greater share than Feisty); it is insulated so need not drop prices across the board as much as otherwise;
4. Ourstore is the leader not follower; can do something else (nonprice)
5. Ourstore waits for Major to act; that's good/necessary

C. Other Reasons
1. Meet competitor head on; show them they cannot faze us; will meet them price for price
2. Don't want price war, but may be inevitable
3. Decision based on cost, gross profit, target profit goals
4. Decision based on price spread re competitors, price points; need 'random' pricing
5. Decision affected by perception that cuts are temporary; Feisty will back down

D. Evaluation of Tom's decision
1. Decision good/correct/acceptable; would have done the same
2. Decision bad/poor/costly; reflects poor judgment
E. Additional Information Required
1. Better price survey (more extensive, more competitors, more items) required
2. Customers' subjective reaction to price changes, image, awareness
3. Relative positioning of stores: marketing mix/specialty departments/sizes/locations
4. Demographics/trends/market conditions
5. Effect of Feisty's cuts on profits by store, by department; on market share; relative to goals for period; percentage of customers who switched as primary shoppers
6. Effect on Feisty's / Other's sales
7. Previous and future marketing activity of Ourstore; relative to competitors
8. Sales per transaction; Customer count; compared to previous periods

F. Information Evaluation
1. The market information referred to in support/explanation of decision; good to have done it/ necessary/useful
2. The market information was a waste of money; could have been more gainfully used; valueless in present context
3. No mention

Need for Change
1. Too instinctive; seat-of-pants approach to pricing
2. Pricing needs to be responsive to a greater degree; quicker; need more extensive price awareness about competitors; price checks more stores, up-to-date
3. Pricing responsibility concentrated in few hands; need pricing to be tailored to particular areas
4. Overall lower prices needed; constrained by store size; lack of law enforcement
5. Lack of focused pricing goals
6. Be less instinctive in pricing; not so responsive; switch to EDLP; stronger gross needed
7. Need to stress aggressive price and service qualities; try new types of pricing; new formats; react to discounters and warehouse clubs
APPENDIX D

TRADE JOURNAL RECOMMENDATION ON HEURISTIC-BASED PRICING
EXHIBIT 1: THE VISIBLE ITEM PRICING TACTIC
AS A NORMATIVE RECOMMENDATION

Controlled Losses
Make Money

by Calvin D. Mayne
Co-owner
Dorothy Lane Super Market
Dayton, O.

You can take a loss, and still make a profit, says Calvin Mayne of Dorothy Lane Super Market in Dayton, O. The secret is controlled merchandising.

I think the greatest price impression a woman gets is on the first 10 to 12 items she buys. She gets a price impression by buying these items every week or 52 times a year. When she repeatedly buys an item, its price is firmly established in her mind. We carry these items at a very low figure and feature them at a loss occasionally.

As you know, we don't have any six-per-cent law in this state so we can use a loss leader, and we don't use controlled loss leaders. In other words, we are losing up to one per cent and we know we can still make a profit at that figure. However, our loss now has only been running from a quarter to a half of one per cent.

There are three items that are too dangerous to use as permanent loss leaders. The volume on these items is so great that it's not safe to use them to the extent that we lose money. They are white bread, fresh milk, and cigarettes. Cigarettes are a controlled item in the state of Ohio so we are never undersold on these items. On the other hand, we do try to maintain them at a profit. Eggs are another traffic item that should be sold on a quality basis, and we make a good profit here. Our standard markup is 10 cents per dozen over cost. We feature eggs in our store ads once or twice a year, stressing quality at a fair price.

Here are the items we consider most important, listed in their order of effectiveness: Sugar is our number one traffic item. We sell it at 49 cents at all times. Next is coffee. The shelf price is 79 cents for all nationally advertised brands. We feature one brand at 69 cents each week. We don't put emphasis on bag coffee because we feel it appeals to the lower caliber customer. But we sell it at 59 cents—IGA depot price.

We sell butter—always good quality, no less than 92 score—at a low price. If we want traffic, then we sell at 59 cents or less if the occasion warrants it. Our flour is all national brands, always 49 cents. IGA and other brands are cheaper. We leave the price at 49 cents year round on nationally advertised brands.

All our nationally advertised brands of shortening are three to five cents cheaper on three pound cans than competition. We feature them as we need the traffic.

The man of the house usually buys dog foods, and steers his wife away from the store that charges too much. He may judge a whole grocery bill by this one item. We're always one cent less than competition.

We sell canned milk because we feel it's a baby food. We're always the cheapest in town. We sell baby food three for 29 cents on the average, two for 29 cents on the junior—constantly lower than competition. Soap powder is becoming less important, but the housewife still needs it once a week. Bar soap is bought every two or three weeks. We carry maximum one cent below competition. Generally, we try to arrive at an odd price figure. We don't like an even figure on this item. We try to keep our soaps a cent under competition, with the exception of A&P whose prices are even with ours.

These are the important items and we use these prices to determine our traffic. When we need traffic, we drop prices; when there's too much traffic, we raise them. These items and prices determine the type and number of customers we supply.
good traffic items

Mayne submits this list of other traffic items in their order of importance:

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>biscuits</td>
<td>catsup</td>
</tr>
<tr>
<td>prune juice</td>
<td>bleach</td>
</tr>
<tr>
<td>toilet paper</td>
<td>gelatin desserts</td>
</tr>
<tr>
<td>instant coffee</td>
<td>frozen pot-pies</td>
</tr>
<tr>
<td>bacon</td>
<td>frozen quick dinners</td>
</tr>
<tr>
<td>head lettuce</td>
<td>frying chickens</td>
</tr>
<tr>
<td>potatoes</td>
<td>spiced luncheon meats</td>
</tr>
<tr>
<td>peaches—2½</td>
<td>pork and beans</td>
</tr>
<tr>
<td>apple sauce</td>
<td>black pepper</td>
</tr>
<tr>
<td>salad dressing</td>
<td>½ gal. ice cream</td>
</tr>
<tr>
<td>soft drinks</td>
<td>longhorn cheese</td>
</tr>
<tr>
<td>frozen orange juice</td>
<td>fruits in season</td>
</tr>
<tr>
<td>(lemonade in season)</td>
<td>strawberry preserves</td>
</tr>
<tr>
<td>frozen peas</td>
<td>1½ soda crackers</td>
</tr>
<tr>
<td>tomato juice</td>
<td>1½ sprazed crackers</td>
</tr>
</tbody>
</table>

Mayne explains: "These items can cause a lot of controversy in various sections of the country. They need not be a hard-and-fast rule. Biscuits below the Mason-Dixon line are a high traffic item and also a lot of housewives will judge a store by just this one item. It is not so important in the north.

"Head lettuce, we found out, by giving a price of 19 cents the year round causes more controversy in competitive stores than anything else and where we know that on a price of 19 cents the year round we make money on the overall picture. This price on head lettuce draws more customers than any other item in our fresh vegetable department."

Source: Supermarket Management (December 1959), pages 74,76.
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