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Paving the way for "distinguished marketing"

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ABSTRACT

Over the last six decades, marketing concepts, tools, and knowledge have gone through tremendous developments. A general trend toward formalization has affected orientation and decision making and has clarified the relationship between marketing efforts and performance measures. This evolution has received strong support from concurrent revolutions in data collection and research techniques. This article outlines the formalization of the marketing discipline and proposes steps that will pave the way for future developments in marketing, toward what I call "*distinguished marketing*".

1. Introduction

As a discipline, marketing has made enormous progress since its emergence in the second half of the twentieth century. Its early days were marked by the introduction of the marketing concept (McKitterick, 1957), the idea of the marketing mix (Borden, 1964), segmentation (Smith, 1956), and even formal approaches to marketing systems (Verdoorn, 1956). At that time, marketers could observe the creation of useful concepts such as market and customer orientations, the formal organization of marketing activities, the emergence of marketing knowledge, and the application and development of advanced (statistical) techniques. Many organizations, in turn, have embraced the marketing concept by using segmentation techniques, specifying marketing strategies, and establishing dedicated marketing departments (staff or line). Although marketing seems to have earned its place in organizations, major differences remain in how organizations are market *oriented*, how they *organize* and *operationalize* their marketing activities, and how they use marketing knowledge. Moreover, many marketing problems have not yet been solved, such as how organizations should become customer-centric (orientation) (Shah, Rust, Parasuraman, Staelin, & Day, 2006), what the capabilities of marketing departments should be (organization) (Verhoef & Leeflang, 2009), and how marketing activities should be organized to satisfy stakeholders' aims (operationalization). Marketing scientists may assist in the search for these answers.[1]

Thus, in this paper, I discuss opportunities for developments in the marketing discipline that may lead to what I call "*distinguished marketing*". I define this new term by its *orientation*, the *organization* of marketing within firms, and the quality of decision making (i.e., *operationalization*), and I consider how and to what degree modern research methodologies can be applied to establish formal connections between marketing efforts and performance measures. The orientation of distinguished marketing is interactive, endogenous, and reflective of the articulated and extracted wants of targeted customers. A distinguished marketing department is organized in such a way that it exerts influence over relevant marketing and related decisions so that all pertinent departments cooperate to create *customer value*. Furthermore, the quality of its decision making is knowledge-based, stemming from relevant information and useful decision tools. I believe that the orientation, organization, and operationalization are the three pillars that determine the degree of distinction that firms performing marketing activities can achieve above other firms. I also believe that this achievement is necessary for the development of the marketing discipline and the proper use of this discipline in practice. Such marketing also is distinguishable from many forms of marketing observed in practice. Fig. 1 summarizes the interactions between these three concepts, as well as additional topics that I discuss in greater detail herein.

The discussion in this paper begins with my description of some developments and future directions related to marketing's orientation

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[1] The term marketing science was appropriated in the early 1980s by researchers who favor quantitative and analytical approaches. Here we interpret marketing science as the scientific approach to the study of marketing. This "broader" perspective includes the contributions of many disciplines relevant to the development of the marketing discipline.

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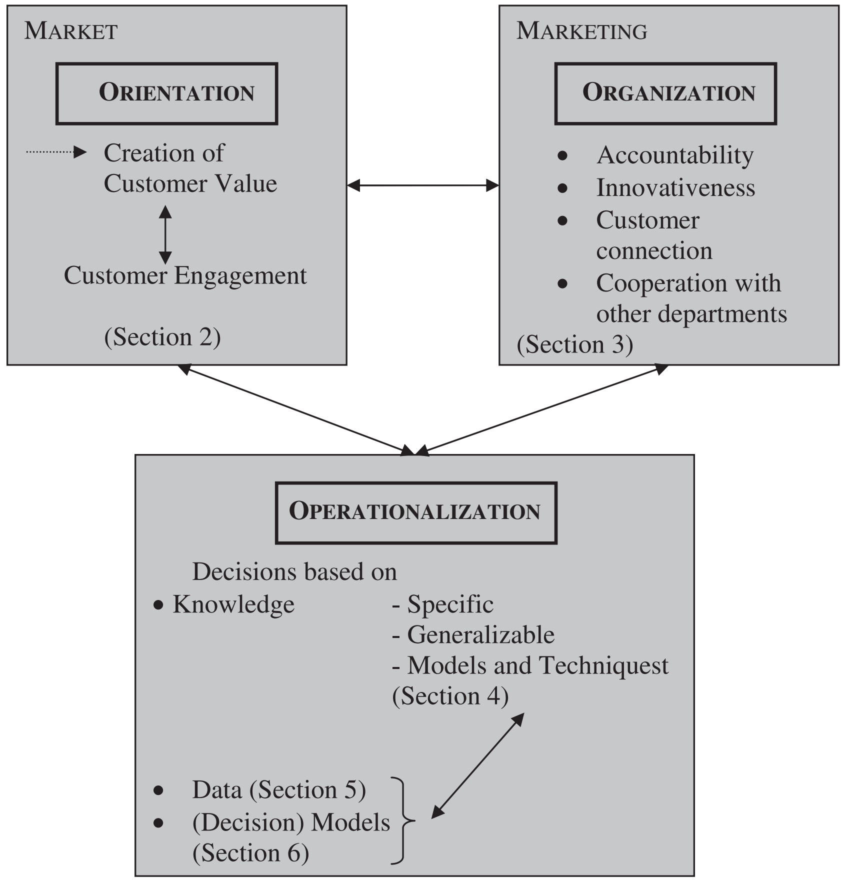

Fig. 1. Elements that constitute pathways toward distinguished marketing.

and its role in the firm (organization). Afterward, I devote some attention to specifying marketing decisions (operationalization), I describe three foundations for decision making: knowledge about market(ing) phenomena, data, and decision models that formalize relations between marketing efforts and marketing performance measures. Finally, I discuss some developments in knowledge generation, data collection, and decision models. Each section features key takeaways and items that should be on the research agendas of marketing scientists. Throughout this paper, I illustrate the theoretical discussion with examples from my past, present, and ongoing research.

2. Marketing's orientation

The introduction of the marketing concept marks the beginning of an important era in the development of the marketing discipline, although the concept has been modified in several directions since that time. For example, both Day and Wensley's (1983) integrative paradigm and Kotler and Keller's (2006) holistic concept consider customer behavior endogenous and marketing efforts exogenous. In contrast, the role of the customer is more central, and probably even exogenous, according to the *customer concept* (Hoekstra, Leeflang, & Wittink, 1999) and the *customer engagement concept*. In this context, exogeneity means that specification of the marketing mix is determined by customers to a certain degree. In contrast, endogeneity means that suppliers determine and specify the offer, and customers have the choice to accept this offer or not.

The customer concept holds that strategies should aim to realize superior customer value, and business objectives should be stated in customer terms (e.g., customer satisfaction, customer equity, Net Promoter Score [NPS]). Day and Moorman (2010) state the most fundamental question in this context "What customer value do we deliver with which capabilities?" (see also Frambach & Leeflang, 2009). Such a management orientation enables firms to establish relationships with selected, individual target customers, with whom it can achieve superior customer values through design, offerings, redefinitions, and realizations in close cooperation with other partners in the marketing system (e.g., suppliers, intermediaries, internal constituencies). This orientation implies "new" marketing activities (*operationalization*), such as co-creation (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010), production to order, and prices based on participative pricing mechanisms (Kim, Natter, & Spann, 2009). Exchanges are facilitated by two-way communication, customized promotions (Zhang & Wedel, 2009), and distribution according to the customer's expectations. Relationships and interfaces between marketing departments and other functions, such as sales, production, R&D, finance, and accounting, are part of the new domain (interfunctional coordination), corresponding with the idea that every employee in the firm has a responsibility to create superior value. The concept also recognizes the potential value of collaborative relationships with partners (e.g., suppliers, channel members). The customer concept is typically embraced by firms that prioritize a customer intimacy value strategy.

The critical conceptual shift from product-centric to customer-focused organizations has been a topic of discussion for more than 50 years (Shah et al., 2006). Verhoef, Reinartz, and Krafft (2010) consider the change to customer centricity slow and find room for another concept, with broader activities and probably new domains (see also Rust, Moorman, & Bhalla, 2010). The next frontier in this realm is the concept of *customer engagement* (CE). CE is based on an "interaction orientation" (Ramani & Kumar, 2008). Van Doorn et al. (2010) define CE behaviors as manifestations of a brand or firm focus, beyond purchase that results from motivational drivers. These behavioral manifestations can be either positive (positive recommendations) or negative (posting a negative brand message on a blog), and typical examples include word of mouth (WoM) (Libai et al., 2010), referrals, recommendations, participation in firm-related activities (e.g., product development, brand communities; Hoyer et al., 2010), suggestions for service improvements, and even revenge activities (Bijmolt et al., 2010).

CE may be the answer to the flaws of a classic view, in which the customer is endogenous to the firm and simply receives the firm's active value creation efforts (Deshpandé, 1983). CE instead suggests that customers co-create value, determine the competitive strategy, collaborate in innovation, and thus can become "more" exogenous to the firm (Schau, Muñiz, & Arnould, 2009). This orientation requires that organizations are able and willing to extract customers' value and needs (Homburg, Wieseke, & Bornemann, 2009). CE also seeks an even more active role from the customer than that specified in the customer concept: CE constitutes a *behavioral* manifestation that can be stimulated by organizations. Don Lehmann (in private conversation) has stated that firms no longer control marketing, but rather customers (via the Web, for example) define what a company is (and is not). In this sense, CE may contribute to the creation of distinguished marketing, and I believe the concept deserves scales developed specifically to define and measure this orientation. Another pressing question involves ways to determine the firms for which this concept is most appropriate.

Key takeaway:

1. "Distinguished marketing" is based on an (interaction) orientation in which the customers' needs and values are leading to determine supply. This basis is possible if (a) organizations are able and willing to extract knowledge about the specification of customers' needs in terms of product attributes, information, delivery conditions, and participation pricing mechanisms, and (b) organizations use the opportunities they receive to communicate with (potential) customers and to store data about their demands. This orientation should direct supply behavior and make it more endogenous in the future.

Research agenda:

1. Develop appropriate scales to measure customer engagement.
2. Determine the types of firms for which the customer concept/ customer engagement concept is an appropriate orientation.

3. Marketing and the firm: organization

Over the years, marketing has gained importance, such that many companies now include marketing as a line or a staff function. In the late 1970s and 1980s, many companies restructured into strategic business units (SBUs), and marketing determined most of the firm's strategies (Abell & Hammond, 1979). But, the situation has changed dramatically; marketing academics now frequently express concerns about marketing's decreasing influence (Nath & Mahajan, 2008).

Thus, recent studies investigate the influence of the marketing department (Verhoef & Leeflang, 2009; Verhoef, Leeflang, et al., 2009) to identify its determinants. The outcomes of the Verhoef and Leeflang study are based on data from the Netherlands. Verhoef, Leeflang, et al. (2009) is an international study that covers data from seven countries: Australia, Germany, Israel, the Netherlands, Sweden, the United Kingdom and the United States. These studies demonstrate that accountability, innovativeness, and customer connections increase marketing's influence. Accountability involves the justification of marketing expenditures based on their contributions to performance measures (metrics), such as return on investments (ROI), margins, or the firm's profits. The marketing department's innovativeness refers to the degree to which it contributes to the firm's new products. Finally, customer connection reflects the extent to which the marketing department can translate customer needs into customer solutions—a focal element of a marketing orientation (Day & Moorman, 2010; Hauser, Simester, & Wernerfelt, 1996). Implementation of the customer connection concept is highly relevant, especially in relation to the customer and CE concepts. Furthermore, in the international study, Verhoef, Leeflang, et al. (2009) find that the marketing department has a positive effect on business performance, beyond the impact of market orientation. The marketing department also has a positive impact on market orientation. In this respect, the findings from recent research are significant: when the marketing department provides high quality research and can translate customer needs into product characteristics (customer connection), its influence in new product decisions increases (Drechsler, Natter, & Leeflang, forthcoming). This influence also enhances the firm's innovation performance.

Yet, the average importance of marketing across different decisions, as compared with other departments such as sales, R&D and finance, differs notably depending on the firm's country. In particular, in the United States and Israel, marketing is almost always dominant, as compared with other departments such as sales, R&D and finance. In Germany, the Netherlands, the United Kingdom, Sweden, and Australia, the marketing department is less influential.

Conducted by Argyriou, Leeflang, Saunders, and Verhoef (2009), in cooperation with the Chartered Institute of Marketing, a survey of 100 chief marketing officers (CMOs) and 100 chief financial officers (CFOs) of comparable firms offers more detailed insights[2]:

- CMOs and CFOs agree about the importance of marketing and the quality of their firms' marketers; there is no significant difference in the proportion who recognizes the strategic importance of marketing (68%) or the exceptional importance of branding to their business (80%).
- Many CFOs believe that the business exists primarily to serve customers (62%).
- Marketers are well respected by CFOs for their ability to measure customer satisfaction systematically (65%), monitor the firm's ability to serve customers (52%), and promote customer needs within the firm (65%).
- There is widespread respect for the professionalism of marketers, who are perceived as having a good knowledge of marketing (72%) and the skills necessary to convert customer needs into technical specifications (62%).

However, the survey also reveals some bad news, for and about marketers and marketing:

- *Both* CFOs and CMOs agree that marketers rarely show how customer needs can be taken into account strategically (79%).
- *Both* functions recognize the introversion of marketing with regard to the financial outcomes of marketing activities and the effectiveness of linking marketing with other business activities.
- Marketers fail to engage the analytical and creative sides of their division.
- Many say that:
  - marketing lacks novelty (61%),
  - promotional campaigns are routine (53%),
  - marketing emphasizes only tested and proven methods (43%), and
  - campaigns are dull (47%).

If we want to move toward distinguished marketing, articulated and extracted customer values must be translated by accountable and innovative marketing departments in close cooperation with other departments in the firm.

Other topics that require attention are the organization of marketing departments within firms and the cooperation between marketing and other departments, particularly sales, finance, IT, and top management.

[2] In this U.K. study, we attempted to identify varying perceptions between CMOs and CFOs, using greater detail than in the Verhoef, Leeflang, et al. (2009) study.

Studies about the marketing–sales interface, such as that by Homburg, Jensen, and Krohmer (2008), offer relevant information for paving the way to optimal organizational structures. Other studies, such as Bijmolt et al. (2010), provide insights into possible gaps between marketing management and information management.

Key takeaways:

1. Marketing departments that have capabilities related to accountability, innovativeness, and customer connection and that can also create customer value through cooperation with other departments will able to move toward the development of distinguished marketing.
2. There is much room, as well as a profound need, to strengthen marketers' skills and abilities and thereby create stronger marketing departments.

Research agenda:

1. Provide directions implementing accountability, increasing innovativeness, and realizing customer connections (Verhoef & Leeflang, forthcoming).
2. Reveal how marketing departments should be organized, given a specific setting and particular product and market conditions. A relevant question in this respect: does a firm really need a marketing department, or merely a culture that is intrinsically motivated to satisfy customer needs?
3. Define steps to achieve optimal cooperation between the marketing department and other departments.

4. Knowledge generation as a basis for operationalization

Decision making (operationalization) in marketing should be based on knowledge about customers, and, more broadly, market phenomena. In the last six decades, much of this knowledge has been generated through the process known as marketing science, interpreted in a broad sense (see Footnote 1). Marketing knowledge contains the following components: (1) specific knowledge about marketing phenomena, (2) generalizations, and (3) models and methods.

4.1. Specific knowledge

First, knowledge about marketing phenomena can be generated through *specific studies*. As one example, some studies dissect the sales promotion bump into own, cross-brand, and cross-period effects (van Heerde, Leeflang, & Wittink, 2004), as well as cross-category effects (Leeflang & Parreño Selva, forthcoming; Leeflang, Parreño Selva, Van Dijk, & Wittink, 2008). Other studies determine the effects of introducing an informational Web site on shopping behavior (Pauwels, Leeflang, Teerling, & Huizingh, forthcoming; van Nierop, Leeflang, Teerling, & Huizingh, forthcoming). Many other examples appear in textbooks, such as *Marketing Management* by Kotler and Keller (2006) or the *Handbook of Marketing* (Weitz & Wensley, 2002).

Although most specific knowledge refers to companies that provide products and services to (final) customers, we are far from what Hermann Simon (1994) sarcastically called “coffee marketing science”.[3] The number of formal applications in business-to-business (B2B) areas is growing in absolute terms, although this number remains relatively low considering the substantial percentage of firms that perform B2B marketing activities. Studies now consider contracts between firms (Bolton, Lemon, & Verhoef, 2008), network externalities (Goldenberg, Libai, & Muller, 2010), dyadic relationships between firms such as partner selection (Wuyts & Geyskens, 2005; Wuyts, Verhoef, & Prins, 2009), vertical marketing systems (Wuyts, Stremersch, Van den Bulte, & Franses, 2004), channel pass-through (Nijs, Misra, Anderson, Hansen, & Krishnamurthi, 2010), and cooperation versus competition between manufacturers and retailers (Ailawadi, Kopalle, & Neslin, 2005; Villas-Boas & Zhao, 2005).

Specific topics that have not yet received (much) attention include empirical studies of sponsoring, investments in experience marketing (Tynan & McKechnie, 2009), and opportunities for social media effects. In addition, the best practices for marketing planning procedures and the composition of marketing plans are not yet sufficiently understood, although well-known handbooks offer some exceptions (e.g., Greenley, 1986; Hiebig & Cooper, 2003).

4.2. Generalized knowledge

Generalized knowledge about market phenomena can be generated in several ways, such as finding regularities in customer behavior data. This form of knowledge creation has been strongly advocated by Ehrenberg (1972, 1988, 1995).

But generalized knowledge can also be derived from studies that cover many circumstances (usually with multiple cross-sectional units, such as brands, markets, or countries) and relatively long time periods. Often, panel data aid in this purpose. For example, Deleersnyder, Dekimpe, Steenkamp, and Leeflang (2009) investigate the cyclical sensitivity of advertising expenditures in 37 countries in four key media forms (magazines, newspapers, radio, and television). For 85 country–media combinations, these authors use 25 years of data to explain differences between cyclical sensitivity over media and countries. In addition, they show that advertising is considerably more sensitive to business-cycle fluctuations than the economy as a whole is. Countries in which advertising behaves more cyclically exhibit slower growth in their advertising industry. Furthermore, private labels are growing in countries characterized by greater cyclical spending. Another finding shows that stock price performance is lower for companies that exhibit procyclical advertising spending patterns. Other examples of this type of knowledge generation include Nijs, Dekimpe, Hanssens, and Steenkamp (2001), Steenkamp, Nijs, Hanssens, and Dekimpe (2005), and Lamey, Deleersnyder, Dekimpe, and Steenkamp (2007).

Alternatively, meta-analyses offer statistical assessments of the results from several individual studies to generalize their findings (Wold, 1986), as exemplified by Bijmolt, Van Heerde, and Pieters (2005), Kremer, Bijmolt, Leeflang, and Wieringa (2008) and Albers, Mantrala, and Sridhar (2010). For additional examples, see Hanssens (2009).

Generalized knowledge also can be obtained through simulation experiments, as used by Andrews, Currim, Leeflang, and Lim (2008), who investigate whether and how heterogeneity in marketing mix effects, both between and within segments of stores, affects model fit, forecasts, and the accuracy of marketing mix elasticities. Contrary to expectations, accommodating store-level heterogeneity does not improve the accuracy of marketing mix elasticities relative to a homogeneous (SCAN*PRO) model. Improvements in fit and forecasting accuracy are also fairly modest. In another simulation study, Andrews, Currim, and Leeflang (2011) show that demand models with various heterogeneity specifications do not produce more accurate sales response predictions than a homogeneous demand model applied to store-level data.[4]

Although most generalizations refer to frequently purchased consumer products, an increasing number of publications feature empirical generalizations in B2B marketing settings (see Hanssens, 2009). Yet, there are few formal generalizations about the marketing of services, although some examples can be found in Muller, Peres,

[3] For a reaction, see Parsons, Gijsbrechts, Leeflang, and Wittink (1994).

[4] There is one major exception: a random coefficients model designed to capture within-store heterogeneity using store-level data.

and Mahajan (2009) and in literature on retailing (see the special issue of the *Journal of Retailing*, 85(1), 2009).

Thus, substantial room remains for generating empirical generalizations in areas such as B2B, services, and the relations of performance measures, including commitment, loyalty, satisfaction, and financial metrics (cf. Gupta & Zeithaml, 2006). Corporate social responsibility and financial metrics (Bügel, 2010; Hung & Wyers, 2009; Sen & Bhattacharya, 2001; van Diepen, Donkers, & Franses, 2009), international marketing strategies (Burgess & Steenkamp, 2006), the effects of advertising content (Aribarg, Pieters, & Wedel, 2010; Pieters, Wedel, & Batra, 2010), non-price promotions, co-branding (Helmig, Huber, & Leeflang, 2007, 2008), and the effects of frontline employees represent additional key topics (Di Mascio, 2010).

An area that demands both specific and generalized knowledge is customer-to-customer (C2C) marketing. To the best of my knowledge, there is almost no extant knowledge about transactions or in second-hand markets or garage sales. Quite recently, papers have been prepared that consider the transactions on websites such as eBay (Gupta, Mela, & Vidal-Sanz, 2009; Jap & Naik, 2008).

Another interesting research area, still in development but which receives much attention is the modeling of WoM (Van Eck, Jager, & Leeflang, 2011a, 2011b).

Finally, I want to highlight the potential for generalizations in models of consumer behavior. The first decade of model building for marketing centered on the numerical specification of models with substantial behavioral detail, modeled at the individual customer demand level. Behavior results from a complex interaction of model components. For example, Amstutz (1967) explicitly models variables such as perceived need, awareness, attitudes, and perceived brand image. Farley and Ring (1970) even attempt to calibrate Howard and Sheth's (1969) customer behavior model, although without much success. Yet, it remains remarkable that the numerical specification of general, formalized customer behavior models has received so little attention, even as attention has shifted to the various partial models that shed some light on customer behavior. The popularity of experimentation among behavioral scientists may explain this trend.

4.3. Models and methods[5]

At this point, I discuss developments in what I call “marketing science-type models”; in Section 6, I will shift focus to “implementable marketing decision models.” These marketing science-type models fit the narrow interpretation of marketing science, which refers to qualitative and analytical approaches. Early model building in marketing started by applying organizational (OR) and marketing science (MS) methods to a marketing framework. Less well known is that early demand equations were based on an *economic theory* of customer behavior. For example, specification of the relationship between demand and price in markets with imperfect competition was developed by Verdoorn (1960). The demand function is a structural equation that demonstrates the expansion effect and substitution effect, derived from a collapsible CES-type utility function. Other models with approximately the same structure appear in Armington (1969) and Verdoorn and Schwartz (1972).

The modeling of optimal marketing behavior in different types of oligopolistic markets (Lambin, Naert, & Bultez, 1975), which simultaneously consider demand and supply relationships, offers another example of early research based on economic theory. This fundamental approach has been worked out in greater detail and in different directions by Plat and Leeflang (1988), Leeflang and Wittink (1992, 1996, 2001), and Horvath, Leeflang, Wieringa, and Wittink (2005). Thus, a current revival seems to emphasize models based on economic theory (e.g., structural models; Chintagunta, Erdem, Rossi, & Wedel, 2006).

Early model building paid substantial attention to stochastic customer behavior models, such as Markov (Leeflang, 1974; Leeflang & Koerts, 1974), learning (Leeflang & Boonstra, 1982; Lilien, 1974a, 1974b; Wierenga, 1974, 1978), Bernoulli (Wierenga, 1974) and purchase incidence models, including Poisson-type purchase models (Ehrenberg, 1959, 1972). Thus, another recent revival centers on stochastic customer behavior models that modify Markov models (e.g., hidden Markov models; Netzer, Lattin, & Srinivasan, 2008) and the frequent use of Poisson processes (Van Nierop et al., fortcoming).

The development and/or application of statistical methods and tools also contribute to advance marketing knowledge. For example, a recent study developed a statistical testing sequence that allows for the endogenous determination of potential market changes from competitive entries in existing markets (Kornelis, Dekimpe, & Leeflang, 2008). Other examples include the introduction and use of dynamic linear models in marketing (Ataman, Mela, & Van Heerde, 2007, 2008; Ataman, Van Heerde, & Mela, 2010; Van Heerde, Mela, & Manchanda, 2004), spatial models (Bronnenberg & Mahajan, 2001; Van Dijk, Van Heerde, Leeflang, & Wittink, 2004), semi-parametric estimation (Rust, 1988; Van Heerde, Leeflang, & Wittink, 2001), and the “revival” of Kalman filtering (Osinga, Leeflang, Srinivasan, & Wieringa, 2011; Osinga, Leeflang, & Wieringa, 2010).

Among the many promising research avenues, the modeling of the choice behavior of multiple agents and the use of agent-based modeling and social simulation are of particular interest. Examples of models that consider multiple agents are the studies of intra-household behavioral interactions (Aribarg, Arara, & Kang, 2010; Yang, Zhao, Erdem, & Zhao, 2010), interactions between physicians and patients in the choice of new drugs (Ding & Eliashberg, 2008), and extended interactions between manufacturers and retailers (Ailawadi et al., 2005; Villas-Boas & Zhao, 2005).

Goldenberg, Libai, Moldovan, and Muller (2007) use an agent-based approach to simulate the effects of negative news about the firm and/or its products on the net present value of a firm. Combinations of empirical data and simulated data also offer key opportunities to study (individual) customer behavior in the future (Van Eck, Jager, & Leeflang, 2011a).

The development of models and methods to support decision making is not without problems, however, and several issues demand more adequate answers. First, vast numbers of firms do not make data-driven marketing decisions, often because of their limited capacities (e.g., time, money, capabilities) to collect data about relevant metrics. Nor do most firms estimate relationships between the metrics they have. Subjective estimation methods would be useful tools in these cases. The development of relatively simple methods to establish connections between marketing efforts and marketing performance measures for these firms would be widely welcomed.

Furthermore, even firms that can collect appropriate data face problems. Well-known modeling issues include error-in-variables, (unobserved) heterogeneity, and endogeneity (Shugan, 2006). Despite commendable progress in challenging endogeneity problems (Gupta & Park, 2009; Kuskov & Villas-Boas, 2008; Petrin & Train, 2010), many solutions remain complicated and model specific.

In addition, marketing model building usually centers more on the specification and calibration of the demand side rather than the supply side. More recently, the simultaneity of demand and supply relations has received greater attention in so-called structural models (Dubé et al., 2002; Chintagunta, Erdem, Rossi, & Wedel, 2006; see also commentaries in *Marketing Science*, vol. 25, no. 6), which “rely on economic and/or marketing theories of consumer or firm behavior to

[5] For extensive reviews of these models, see for example monographs by Blattberg, Kim and Neslin (2008); Leeflang, Wittink, Wedel and Naert (2000); Lilien, Rangaswamy, and De Bruyn (2007); and Wierenga (2008), as well as review articles by Bijmolt et al. (2010); Leeflang et al. (2009); Leeflang and Hunneman (2010); Leeflang and Wittink (2000), and Wierenga, Van Bruggen, and Staelin (1999). Finally, I refer readers to the special *IJRM* issue on “Marketing Modeling on the Threshold of the 21st Century” (Vol. 17, no 2–3).

derive the econometric specification that can be taken to data" (Chintagunta et al., 2006, p. 604).

For example, Draganska and Jain (2004) estimate market equilibrium models. Kim et al. (2010) assess user demand for competing products. Liu (2010) investigates alternative pricing strategies, whereas Musalem, Olivares, Bradlow, Terwiesch, and Corsten (2010) seek to measure the effects of out-of-stock situations. These models attempt to optimize the behavior of agents, manufacturers, wholesalers, retailers, and customers. Structural models therefore offer excellent opportunities, at least in principle, (1) to test behavioral assumptions, (2) to investigate alternative strategies through policy simulations, and (3) to eliminate or reduce endogeneity problems. As outlined previously, this approach is not really new. Moreover, Chintagunta et al. (2006) demand that we recognize the drawbacks of structural models, such as their strong identification of mostly parametric assumptions, because otherwise no optimal behavior can be determined. Furthermore, builders of structural marketing models must rely on insufficiently developed theories. The structural demand model developed by Villas-Boas and Zhao (2005) illustrates one of the drawbacks. They investigate the degree of manufacturer competition, retailer–manufacturer interactions, and retailer product category pricing in the U.S. ketchup market. Their model includes multiple manufacturers and individual customers, but only *one* multiproduct retailer. The model also relies on several other restrictive and non-realistic assumptions to find analytical solutions.

Given these shortcomings, a comparison between structural and reduced-form models offers an interesting research area. Skiera (2010) has compared both models (to improve pricing decisions) and concluded that each has unique characteristics and offers promise for different areas of application. An even more profound analysis may lead to a better evaluation of the advantages of structural models compared with reduced-form equations.

Finally, I emphasize the many opportunities to advance our knowledge in the interdisciplinary marketing discipline using theories developed in other sciences, such as economics and psychology. Even flashbacks to theories and models that were developed decades ago may be useful tools in this respect.

Key takeaways:

1. Decision making in marketing benefits from knowledge that is based on specific research outcomes, generalized knowledge, and the development of models and methods. If decision making in marketing is based on such knowledge, it moves in the direction of distinguished marketing.
2. Generalized knowledge can be created by finding regularities, using panel data, conducting meta-analyses, and performing simulation experiments.
3. Early model building was based heavily on economic theory.
4. Marketing scientists should not always reinvent the wheel; they can use theories, methods, and techniques that have proven value in other disciplines.

Research agenda:

1. Generate specific knowledge about sponsoring, experience marketing, the effects of social media, C2C-marketing and marketing planning (plans, procedures, and processes).
2. Generate generalizations about B2B marketing and the marketing of services.
3. Explore the opportunities to model choice behavior of multiple agents.
4. Explore the opportunities of agent-based modeling and social simulation as forms of support for marketing decision making.

Table 1
Data availability (1).

1950	- Store-level data (bimonthly ACNielsen data) - (Relatively small and non-representative) samples of consumer data - More representative and larger samples (Attwood Statistics, Gfk 2000–3000 households) (Leeflang & Olivier, 1985) - Ad hoc surveys (cross-sectional and time-series data)
1985	- The scanning revolution (Bucklin & Gupta, 1999) • Consumer panel data • Store-level data • Cross-sectional and time-series data (panel data) • Daily data
1995	- Internet revolution • Internet data (special issue of *Marketing Science*, vol. 19, no. 1) • Online publications and offline purchases, combined with Web site behavior (Pauwels et al., forthcoming) • Search engines (Telang, et al., 2004) • Recommendation systems (Ansari et al., 2000) • Auctions (Yao & Mela, 2008) • Web-based marketing research (Bucklin & Sismeiro, 2009)
2000	- Databases constructed by individual firms (CRM systems) (Blattberg et al., 2008)
2008	- Data from social media (e.g., Facebook, LinkedIn, Hyves, Weblogs; van Laer & De Ruyter, 2010)

5. Develop subjective estimation methods that are relatively simple to implement.
6. Address statistical topics, such as error-in-variables, (unobserved) heterogeneity, and endogeneity problems that demand solutions.
7. Compare structural and reduced-form models.

5. Data collection as a basis for operationalization

Decision making in marketing must be based on profound data. Revolutionary developments in data collection (see Table 1) offer many opportunities for advanced model building and the application of advanced research methods. For example, the scanning revolution and Internet invasion (Little, 2004) prompted exponential increases in the availability of data. McCann and Gallagher (1990) note that the shift from bimonthly store audit data about brands to weekly scanner data resulted in a 10,000-fold increase in available data. Access to and use of Internet data, social media, and data from customer relationship management (CRM) systems has multiplied this increase exponentially.

The scanning revolution may seem ancient now, but an example should remind us of its astounding effects. In 1974, I estimated market share models from data pertaining to the market for soup in bags in the Netherlands, employing 11 years of annual data (Leeflang, 1974). The data were available for five brands of soup in bags, and the market shares of these brands were assumed to be determined by the usual marketing mix instruments and a variable that accounts for the number of varieties in the assortment of each brand. By pooling the five brands and applying ordinary least squares (OLS), I produced models with many significant parameters (see Leeflang, 1974, p. 165–170). The related R^2s indicated that the models fit the data quite well. In a later study (Boven, Leeflang, Reuyl, & Ronner, 1984) that accounted for serial correlation, heteroscedasticity, and contemporaneous correlation, the application of iterative generalized least squares (IGLS) (using a two-step Aitken estimator) changed the parameter estimates, their significance, and the explained variance dramatically. The IGLS parameter estimates came from more than 300 iterations, after which the parameters converged to the indicated values. The signs of the price and distribution parameter even collapsed after all of these iterations. The substantial differences between OLS and IGLS estimates reflected the small number of observations available to estimate parameters and the elements of the variance–covariance matrix of disturbances.

These studies (Boven et al., 1984; Leeflang, 1974) included one (annual) observation per year, but recent studies commonly calibrate models using several thousand data points. For example, Nies, Leeflang, Bijmolt, and Natter (2011) use daily store data (i.e., 300 data points per store per year) and have access to these data for 250 stores for each item in a substantial number of product categories—providing approximately 75,000–100,000 data points per year at the stock keeping unit level. These data offer excellent opportunities to estimate day-specific promotion effects including lags and leads, such that the researcher accounts for different promotion frames and all kinds of other variables that affect the demand, as well as the parameter estimates. The availability of data thus offers ample opportunities to calibrate (almost) complete models and apply statistical techniques, such as time-series analysis, state space models, choice models, spatial models, agent-based models, hierarchical models, matching methods, structural models, and Bayesian models (Leeflang & Hunneman, 2010).

The demand for (and supply of) appropriate data depends on the metrics used in science and practice (Bendle, Farris, Pfeifer, & Reibstein, 2010; Farris, Bendle, Pfeifer, & Reibstein, 2005). Considering the number of metrics that are now explicit and available, it may be useful to investigate which are most relevant in specific situations. In this sense, it is revealing to observe that the type of endogenous variable (performance metric) used in marketing decision making has evolved over time, as illustrated in Table 2. Yet, Table 2 does not include a specification of the marketing mix as an endogenous metric in cases that introduce customer engagement. Such endogenous variables include the outcomes of participatory pricing and the product attributes of co-created products.

As Table 2 shows, there are many studies that relate marketing efforts to firm performance measures, such as customer life time value, customer equity, and even firm value (usually in the form of stock prices and volatility in stock prices). These studies demonstrate the importance and contribution of marketing efforts to firm value and probably (we hope) can help marketing regain its position in the boardroom (compare Section 3). But, marketers have a responsibility that usually is measured in terms of profit; thus, do studies in which relations between marketing efforts and firm value are formalized have much real relevance *for practitioners*? This question can also be put on the research agenda.

Key takeaways:

1. Given the enormous growth in the availability of data, many opportunities exist to apply statistical methods and model market phenomena.
2. If a limited number of observations are available to calibrate a model, problems emerge if researchers must account for the violation of one or more of the basic assumptions of the disturbance terms (e.g., Leeflang et al., 2000, pp 329–348).
3. Models that relate marketing efforts to firm value likely have little relevance for marketing practitioners.

Research agenda:

1. Specify the most relevant metrics, given specific firm situations (see also Section 6).
2. Conduct additional research to establish the practical value to marketing executives of models that relate marketing efforts to firm value.

6. Model-based decision making

Decision making in marketing is based on at least three pillars: knowledge (Section 4), data (Section 5), and the formal relationships between performance data and marketing efforts. These relationships are based on decision models; therefore, further development of such models paves the way toward distinguished marketing.

6.1. Decision models

Decision models are useful tools to pave the way to distinguished marketing, and they can benefit from knowledge generation in the form of specifications (theoretical foundation), parameterization (methods), and validation (face validity).

Managers need decision models to avoid as many biases as possible in decision making. As an example, managerial practice quite often deviates from model-based normative implications, resulting in under- and overreaction to competitors' marketing activities (Leeflang & Wittink, 1996, 2001). Yet, the implementation of decision models as a

Table 2
Performance measures in models over time.

Metric	Example	Publications
Sales:		
• Product class	• Demand for electricity	Van Helden et al. (1987) Leeflang & Wieringa (2010)
• Brand level	• Demand for cigarettes	Leeflang & Reuyl (1984) Fischer et al. (2010)
	• Demand for pharmaceuticals	Fischer et al. (2010) Leeflang & Wieringa (2010)
	- market share	
	- units	
Profit	• Optimizing price, advertising, expenditures, etc.	Dorfman & Steiner (1954) Verdoorn (1956) Best (2004)
Brand equity	• Impact of marketing expenditures on equity	Yoo et al. (2000)
Customer satisfaction	• Impact of marketing expenditures on satisfaction	De Wulf et al. (2001) Gomez et al. (2004)
Customer life time value (CLV)/customer equity	• Budget allocation	Niraj et al. (2001) Reinartz et al. (2005)
Word-of-Mouth (WoM) net promoter score	• Impact of satisfaction on WoM	Arnett et al. (2003) Villanueva et al. (2008)
Gratitude	• Impact of investments in relationship marketing on gratitude	Palmatier et al. (2009)
Firm value	Impact of	
	• brand equity	Madden et al. (2006)
	• customer satisfaction	Fornell et al. (2006)
	• WoM	Luo (2009)
	• customer equity	Kumar & Shah (2009)
	• advertising, innovations, promotions	Srinivasan & Hanssens (2009)
	• direct-to-consumer advertising on firm value	Osinga et al. (2011)

Table 3
Differences between marketing science models and marketing decision models.

Marketing science models...	Decision models...
• Generally deal with specific problems	• Generally are used to support repetitive decision making
• Generate more descriptive than prescriptive answers	• Should generate solutions (prescriptions) rather than descriptions
• Generally do not give priority to implementation	• Must satisfy criteria such as simple, complete on important issues, and robust
• Need much time for development	• Often use less-than-ideal data
• Use techniques with a high degree of sophistication	• Should be developed within a short time frame.
	• Tend to be based on simple, unsophisticated methods

means to realize distinguished marketing is not without problems. After almost two decades of research into model building, Little (1970) wrote his "protest" paper, in which he stated bluntly that the major problem with management science models is that managers almost never use them.

In particular, Little cited the following obstacles:

- Good models are hard to find.
- Good empirical estimation of parameters is even more difficult.
- Managers do not understand the models.
- Most models are incomplete with regard to important issues.

Little (1970, p.470) therefore advocates a decision calculus, "a model-based set of procedures for processing data and judgments to assist a manager in … decision making." This decision calculus should be (1) simple, (2) robust, (3) easy to control, (4) adaptive, (5) complete on important issues, and (6) easy to communicate. These and other issues have been addressed in great detail by Naert and Leeflang (1978). Other publications pay specific attention to issues such as robustness (e.g., Leeflang & Reuyl, 1984; Naert & Weverbergh, 1985) and adaptiveness (Foekens, Leeflang, & Wittink, 1999). In a recent paper, Coughlan et al. (2010) also emphasize that "analytical models" should be parsimonious (simple) and robust. A parsimonious model is one that focuses on the truly important aspects of a problem; a robust model is one whose findings or predictions hold up even with the relaxation of its assumptions.

Leeflang (2004) and Hanssens, Leeflang, and Wittink (2005) therefore explain a gap between marketing science models and decision models, as I summarize in Table 3.

Two elements of Table 3 demand clarification. First, many models developed for marketing science need significant time to complete. They require large data sets and suffer from a rash of potential problems: multicollinearity, endogeneity, seasonality, trends, day-of-the week effects, simultaneity, and others. In addition, many widely accepted decision models are rather simple in nature and feature approaches such as data splitting, cross-tabulations, and univariate frequencies. The vastly popular services and products offered by ACNielsen, including "Category Management," "Direct Product Profitability," "Out of Stock," and "Shelf Metrics" tools, are based on the aforementioned approaches and other similarly simple techniques.

Hanssens et al. (2005) argue in turn that marketing scientists and professional marketing researchers should develop *standardized models* together, a notion discussed briefly by Little (2004) as well. Standardized models include a set of one or more (numerically specified) relationships, with a fixed mathematical form and relevant variables. These models are calibrated with data obtained in a standardized way (e.g., audits, panels, surveys), over standardized time periods. The outcomes also use a standardized format, such as predicted own-item sales indices for all possible combinations of a display and specific price points or the predicted market shares for new products. Such standardized models can be facilitated by detailed databases, including those developed by ACNielsen, IRI (Information Resources, Inc.), IMS Health, and GfK. Accordingly, many examples of standardized models exist, including SCAN*PRO (Wittink, Addona, Hawkes, & Porter, 1988), PROMOTION SCAN (Abraham & Lodish, 1990), and ASSESSOR (Urban, 1993).

Table 4
Data availability: data stored in customer databases (percentages of firms).
Sources: based on Verhoef et al. (2002); Verhoef et al. (2009b).

	2003	2008
Type of product purchased	68	81
Demographics	34	56
Lifestyle data	17	40
Number of offers (outbound actions)	62	72
Share of wallet	7	34
Interaction information	42	76
Customer satisfaction data	12	60

Knowledge about market response estimates provides a basis for benchmarks, which also constitute a bridge between management science models and marketing practice. Managers who will practice distinguished marketing thus can benefit from such benchmarks. My experience in executive teaching has shown me that most marketers have no clue about the average value of price or advertising elasticities. Most advertising elasticities are thus subjectively overestimated (average estimate 0.5), whereas price elasticities are underestimated (average estimate −1). Meta-analyses of advertising effectiveness (Assmus, Farley, & Lehmann, 1984; Sethuraman & Tellis, 1991) instead reveal actual average sales-to-advertising elasticity between 0.25 and 0.1. The average price elasticity at the brand-to-scale level is −2.6 (Bijmolt, van Heerde, & Pieters, 2005).

In addition to standardization and the diffusion of (generalized) knowledge, Hanssens et al. (2005) suggest that, to bridge the gap between general managers and marketing scientists, models should connect the effects of marketing instruments to firm objectives instead of marketing objectives. In this respect, relatively new studies at the marketing–finance interface, as briefly noted in Sections 4 and 5, are pertinent.

Bridges across the outcomes of scientific work and marketing decision making in practice also rely on the development of decision support systems—those collections of data, models, statistical packages, and optimization routines that help managers make decisions (Little, 1979, 2004). Standardized models could be embedded in such systems (Little, 2004), including the various computerized marketing management support systems (MMSS). A discussion of these is beyond the scope of this paper, but interested readers should peruse Lilien and Rangaswamy (2003), Wierenga et al. (1999), and Wierenga and van Bruggen (1997, 2000).

Table 5
Use of statistical techniques for segmentation and forecasting (percentages of firms).
Sources: Verhoef et al.(2002); Verhoef et al. (2009b).

	2003	2008
Genetic algorithms	3	35
Neural networks	5	44
Factor analyses	19	56
Cluster analyses	32	67
Discriminant analyses	13	43
Logit/probit analyses	6	44
Linear regression analyses	33	60
CHAIN/CART	17	54
Cross tabulations	54	65
RFM analyses	42	52

Furthermore, marketers who pave the way to distinguished marketing may rely on decision-making aids, according to recent research. Kayande, De Bruyn, Lilien, Rangaswamy, and Van Bruggen (2009) demonstrate that model-based decision support systems improve performance in many contexts that are data rich, entail uncertainty, and require repetitive decisions. For example, many companies now implement customer relationship management (CRM) systems, and in certain conditions, with the required changes in organizational structures, these systems and their large databases contribute effectively to the firm's performance (Becker, Greve, & Albers, 2009).

6.2. Implementation

To the best of my knowledge, no surveys supply information about the penetration of marketing decision models throughout marketing practice, although some findings imply increasing diffusion. First, many firms use metrics. Bendle et al. (2010) recently demonstrated that financial metrics are widely regarded as the most useful; of the metrics that are usually considered marketing metrics, only customer satisfaction (71%) and loyalty (69%) make the top ten list, according to senior managers. In addition, Verhoef, Hoekstra, Van der Scheer, and De Vries (2009b) study the data and metrics stored in the databases of 183 Dutch firms and find that many firms collect data systematically over time, a finding that appears clear in comparison with the metrics collected in a previous survey (Verhoef, Spring, Hoekstra, & Leeflang, 2002), as Table 4 illustrates.

Yet, data collection does not necessitate that the variables are related formally in marketing decision models. Verhoef et al. (2009b) conclude that only about 20% of all firms perform statistical analyses using the data they collect.

However, the trends in the types of analyses in Table 5 imply that advanced techniques have gained in importance over time.

Growth in the use and application of standardized models can also be observed. Finally, top consultants such as Accenture, Bain & Company, Booz & Company, the Boston Consulting Group, McKinsey & Company, and Roland Berger Strategy Consultants assist many companies in model-based decision making, using customer-friendly dashboards (Pauwels et al., 2009), measures for value-based (marketing) management, and company-specific models.

Key takeaways:

1. Mutual understanding between practitioners and marketing scientists could be improved with a greater awareness of their different model needs.
2. Decision models that are successfully implemented are usually standardized.
3. Marketing models connected to firm objectives have a higher probability of acceptance among top management than models that use marketing metrics as their dependent variables.
4. The growth of models in practice to support marketing decisions also implies greater formal support for operationalization.
5. The number of companies that collect data about relevant metrics is increasing over time.
6. Although simple methods are preferred to more advanced methods, there has been a general shift toward more sophisticated models over time.

Research agenda:

1. Survey the use of decision models in marketing practice.
2. Determine the needs and possibilities associated with decision making in marketing practice.

7. Conclusion and discussion

Steven Fuller, Professor of Sociology at the University of Warwick (UK), distinguishes two accounts of disciplinary history: winning disciplines (WHIGS) and hisTORY's losers (TORYS). The progressive WHIGS emerge when dispute resolution procedures are more worthwhile than metaphysical differences among the disputants. Instead, TORYS emerge when those unresolved metaphysical differences consolidate and gain empirical and institutional strength, even as the participants forget all about what they were fighting for or against. Previous discussion of the conceptualization of marketing issues, as reflected in the development of what is now known as "marketing science," suggests that marketing as a science is a winning discipline (WHIG). The marketing discipline collects many interdisciplinary theories, centered on varied topics of consumer behavior, advertising (Fennis & Stroebe, 2010), pricing (e.g., reference pricing; Wedel & Leeflang, 1998), and neuromarketing (Pradeep, 2010), as well as applicable theories pertaining to eye tracking for visual marketing (Wedel & Pieters, 2007), to name only a few. In these and other areas, the use of different disciplines, such as economics, mathematics (e.g., game theoretic approaches), social psychology, and engineering, prompts new insights about demand and supply behavior.

During the four decades that I have studied marketing problems, I have witnessed many promising and relevant developments:

1. The growth in formal support for marketing decisions with modeling techniques.
2. An enormous expansion of opportunities to use market data in the form of, for example, scanner and Internet data and information collected from social media.
3. The greater implementation of marketing models in marketing practice.
4. The advance of marketing techniques, leading to a far more widespread use of Bayesian models, spatial models, state-space modeling, and other models.
5. The generation of marketing knowledge and, more specifically, generalizations.
6. A shift in attention in marketing models, from sales as a criterion variable to measures such as brand and customer equity and even firm value, which are closer to firms' ultimate objectives.
7. The emergence of interdisciplinary approaches to analyzing marketing problems.

With its short history, marketing as a discipline has not yet reached maturity. There is still plenty of room for development; I therefore classify several research opportunities and knowledge gaps by their *orientation*, *organization*, and *operationalization* in Table 6.

Table 6
Knowledge gaps in marketing.

	Orientation	Organization	Operationalization: decision making			
			B2C		B2B	C2C
			Goods	Services		
Specific studies	++	+	+++	++	+++	+
Advanced knowledge through:						
Regularities	−	−	+	+	−	−
Panel data	−	−	+	+	±	−
Meta-analysis	++	−	++	+	+	−
Simulations	−	−	+	+	+	+

Notes: +++ Substantial number of studies, ++ moderate number of studies, + a few studies, ± hardly any studies, − no studies.

Based solely on my own observations, this classification is utterly subjective.

However, this table also reveals some promising pathways to advance marketing's knowledge, especially in relation to evolutionary model/theory building and cooperation with practitioners. Many insights into relevant problems, approaches, and the use of appropriate data are available from discussions with managers. The research priorities of the Marketing Science Institute, for example, reflect these insights. Conversations between practitioners and scientists are one of the primary pathways to distinguished marketing. Over the years, I have observed that this discussion, at least in Europe, is less intensive than seems optimal. In my opinion, research interactions with the practical side of marketing are a necessary, though not sufficient, condition for conducting effective research (and for teaching students how to approach business problems appropriately).

Evolutionary model/theory building, in my own experience, is a promising tool. The evolutionary model-building concept has been applied primarily in the context of marketing decision models. By gradually adding complexity to relatively simple models, model builders and model users jointly develop a more complete picture of reality, which increases the likelihood of model acceptance (Leeflang et al., 2000). The concept also can be observed in the sequence of models and model-building methods developed to discover and exploit a particular area in marketing science. Models evolve for many reasons: to identify opportunities to improve a previous specification, to find ways to apply existing approaches to new problems, to combine different research areas into a new one, to create access to better data, or to make new methods (e.g., specification, estimation, testing) available. Accordingly, in marketing science, evolutionary model-building steps require several groups, or even generations, of model builders. In Van Heerde, Leeflang, and Wittink (2002), we illustrated a process for models that measure the effectiveness of sales promotions. In another paper (Leeflang, 2008), I have illustrated this process for models that describe competitive reaction effects.

I also observe that the drive to publish papers, even if they do not contribute to the advancement of our discipline, may sometimes be stronger than the push to solve real-world problems and write good textbooks. However, in my opinion, solving real-world problems is a more promising route than playing the ranking game (Wedlin, 2006).

I further believe that a pathway to distinguished marketing must include the preparation of textbooks that create path dependencies in science and evolutionary model/theory building. Textbooks are often the starting point for (future) researchers and research, and they remain highly relevant to the development of science. They mark the state-of-the-art at that particular moment in the science. Yet, few textbooks approach marketing management problems in a more formal and rigorous manner (cf. Leeflang & Beukenkamp, 1981 and later editions).

In the previous sections, I specified items for the marketing science research agenda and paths to distinguished marketing. Through these and other efforts, I believe we may contribute meaningfully to the next stages in the lifecycle of the marketing discipline.

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