Marketing Decision Making and Decision Support: Challenges and Perspectives for Successful Marketing Management Support Systems

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Gerrit H. van Bruggen

Erasmus University Rotterdam
The Netherlands
gbruggen@rsm.nl

Berend Wierenga

Erasmus University Rotterdam
The Netherlands
bwierenga@rsm.nl

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Marketing Decision Making and Decision Support: Challenges and Perspectives for Successful Marketing Management Support Systems

Gerrit H. van Bruggen[1] and Berend Wierenga[2]

[1] *Rotterdam School of Management, Erasmus University Rotterdam, The Netherlands, gbruggen@rsm.nl*
[2] *Rotterdam School of Management, Erasmus University Rotterdam, The Netherlands, bwierenga@rsm.nl*

Abstract

Marketing management support systems (MMSS) are computer-enabled devices that help marketers to make better decisions. Marketing processes can be quite complex, involving large numbers of variables and mostly outcomes are the results of the actions of many different stakeholders (e.g., the company itself, its customers, its competitors). Moreover, a large number of interdependencies exist between the relevant variables and the outcomes of marketing actions are subject to major uncertainties. Given the complexities of the market place, marketing management support systems are useful tools to help the marketing decision makers carry out their jobs. Marketing management support systems can only be effective when they are optimally geared toward their users. We, therefore, deal with decision making

in marketing (which generates the need for marketing management support systems). We discuss how marketing decisions are made, how they should be made, and the relative roles of analytical versus intuitive cognitive processes in marketing decision making. We also discuss the match between marketing problem-solving modes and the various types of marketing management support systems. Finally we discuss how the impact of MMSS can be improved. This is important, given the current under-utilization of MMSS in practice. We discuss the conditions for the successful implementation and effective use of marketing management support systems. The issue ends with a discussion of the opportunities and challenges for marketing management support systems as we foresee them.

Contents

1

Marketing Processes, Marketing Decision Makers, and Marketing Management Support Systems: Introduction to the Issue

This issue of Foundations and Trends in Marketing addresses the topic of marketing management support systems. In brief, marketing management support systems (MMSS) are computer-enabled devices that help marketers to make better decisions (a more elaborate definition follows later). As shown in Figure 1.1, marketing decision making involves three important entities: marketing processes, the marketing decision maker, and the marketing management support system. Marketing processes (left box of Figure 1.1) comprise the behavior and actions of customers, resellers, competitors, and other relevant parties in the marketplace. Marketing decision making implies interfering in these marketing processes with the purpose of influencing them in a way that serves the objectives of the company. In principle, marketers use the instruments of the marketing mix for this purpose; they offer products, carry out advertising and other promotional activities, they set prices and choose distribution channels through which the products are marketed. Marketing processes can be quite complex, involving large numbers of variables and mostly their outcomes are the results of the actions of many different stakeholders (e.g., the company itself, its customers, its competitors). Moreover, usually, a large number of

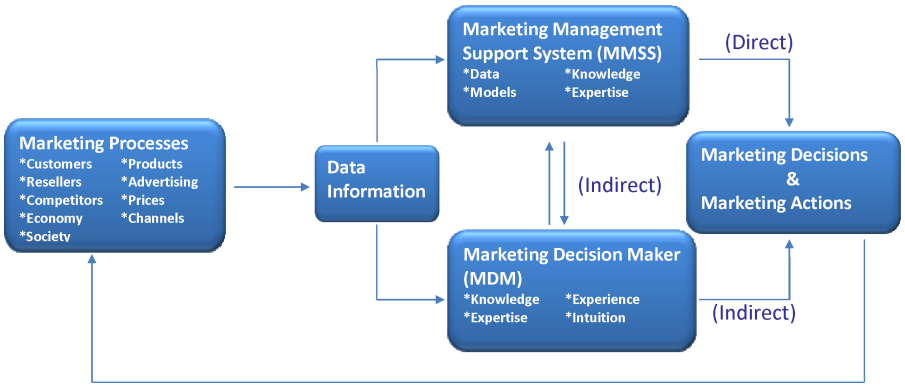

Fig. 1.1 Marketing processes, the marketing decision marker, and the marketing management support system.

interdependencies exist between the relevant variables and the outcomes of marketing actions are subject to major uncertainties. Finally, to make things even more complicated, marketing processes do not take place in isolation, but within the broader context of the economy and the society at large. Given these complexities of the marketplace, marketing management support systems are needed to help the marketing decision makers carry out their jobs.

The marketing decision maker (represented by the central box in Figure 1.1) receives a constant stream of data about marketing processes with respect to the products and brands she/he is responsible for. Marketers use these signals to monitor what is going on, they try to interpret this information to understand the underlying mechanisms of the observed phenomena in the market, and use the resulting insights to take appropriate actions. Usually, marketing decision makers bring an impressive set of assets to the table. They possess knowledge about marketing phenomena, experience with marketing processes in practice, specific knowledge (e.g., industry-specific expertise), and a good deal of intuition. All these elements can be deployed to convert the information about marketing processes into effective decisions. However, at the same time, marketing decision makers are also constrained by serious limitations. Perhaps the most severe limitation is time. It is well-known that managerial activity is characterized by brevity, variety,

and discontinuity (Mintzberg, 1973), and marketing management is no exception. In their day-to-day decision making marketing managers have to allocate their time over a large number of different problems, which makes it extremely difficult to pay concentrated attention to each individual problem. Another limitation is cognitive capacity. As a human being, a marketing decision maker is able to process only a limited amount of information and to consider only a limited number of alternative solutions for a problem at the same time (Miller, 1956). Again, being humans, marketing decision makers are subject to biases, may suffer from overconfidence, and get tired, bored and emotional (Hoch, 2001). Usually it is not sufficient for marketing decision makers to just look at the data and "Let the data speak" is often a too simplistic advice. Analysis is needed to develop insight into the causes of the observed events. For example, why do we see a sudden drop in market share in country X?; why is the performance of this new product so far below the prognosis? To answer such questions, marketers need help from sophisticated decision aids.

This takes us to the core topic of this issue: the marketing management support system, as shown upper-center in Figure 1.1. Marketing management support systems (MMSS) enhance the decision making capabilities of marketers, by improving their efficiency (saved time) as well as their effectiveness (better decisions). As shown in Figure 1.1, a marketing management support system is fed with data about the processes in the marketplace, is in constant interaction with the marketing decision maker, and its output has impact on marketing decisions and marketing actions. The influence of an MMSS[1] on marketing decisions can be either *direct*, that is when specific decisions are completely left to the MMSS (=marketing automation) or *indirect*, that is when marketers take the output of the MMSS into account when making their decisions. As we will see later, at this point in time the indirect way is by far prevalent. Marketing automation is only possible in very specific situations. Marketing decisions and actions, incorporating the influence

[1] Throughout this issue we use the acronym MMSS for the singular (marketing management support system), as well as for the plural (marketing management support systems).

of the MMSS, in turn affect the processes in the marketplace. This is shown by the feedback loop in Figure 1.1.

A marketing management support system can perform different roles. An MMSS can primarily act as a data repository, which is a device that monitors events and provides information about these events to decision makers in such a way that they can easily use it. In this role the MMSS answers the "*what* happened?" question. A more sophisticated MMSS can help detecting cause–effect relationships between events in the marketplace. The MMSS answers the "*why* did it happen?". For example, did we sell so much more because our sales-promotion campaign was extremely effective, or because the competitor reduced the size of its sales force? Next, an even more sophisticated MMSS can consider alternative marketing actions and predict the (conditional) outcomes of these actions. Such an MMSS is able to answer "*what-if?*" questions. For example, what happens to our sales and profit if we would increase the advertising budget with x%? Finally, an MMSS reaches the highest level of sophistication and functionality when it answers the "*what should* happen?" question. "Should we introduce this new product or should we increase our advertising budget with 50% in order to realize our profit target?" are examples of such questions.

MMSS in practice almost always contain a database and the functionality to retrieve data from it. Data are needed for answering the "what" question. In addition an MMSS can contain models which are needed for the analysis of cause-and-effect relationships, for simulations, and for optimization. These are the higher functionality levels of an MMSS. A marketing management support system is not limited to containing quantitative data only. It can also contain qualitative data in the form of knowledge and expertise, for example, in the form of if-then rules in marketing expert systems. The interaction between the marketing decision maker and the MMSS can take different forms. In a very basic form the MMSS sends periodic information to the decision maker, for example, figures about sales, market shares, and profits per month, per week, or even per day. Often, the user can drill down in this data, for example, to look at specific customers groups, specific channels, or specific geographical areas. In an interactive way, the marketing decision maker can also ask specific questions to the MMSS,

about facts (what) or about the relationship between marketing instruments and sales (why). Furthermore, as described above, the marketer can also ask the system to carry out simulations (what-if) or to provide recommendations (what should). Examples of the latter are recommendations for the optimal advertising budget in a fast-moving consumer good company (Little, 1970) or for the best movie schedule in a movie theatre (Eliashberg et al., 2009a).

Relative to other management areas such as finance and operations management, marketing is a domain where human experience and expertise have always played an important role. Many marketing processes are weakly structured and require a good deal of human judgment. Although in this issue we do discuss marketing decisions that can be automated (e.g., in the domain of CRM), many marketing decisions calls for a combination of the judgment, intuition, and expertise of the manager and the analytical capabilities of the MMSS. The best performance in the marketplace will be obtained when the strengths of both models *and* intuition are used (Hoch, 2001). In Section 5 we discuss in more detail how the *combination* of the marketing decision maker and MMSS improves the performance of marketing decision makers.

1.1 The History of Marketing Management Support Systems

The idea of designing systems and models to assist marketers' decision making dates back to over forty years. In (1966), Kotler introduced the concept of a "Marketing Nerve Centre," providing marketing managers with "computer programs which will enhance their power to make decisions." The first of these systems were *marketing information systems* (Brien and Stafford, 1968). The computers that were introduced at that time in companies produced lots of data and a systematic approach was needed to make those data available in a way such that managers could effectively use them for decision making. There was a serious danger of overabundance of irrelevant information (Ackoff, 1967). About ten years later, Little (1979b) introduced the concept of *marketing decision support systems*. He defined a marketing decision support system (MDSS) as a "coordinated collection of data, systems, tools and

techniques with supporting software and hardware by which an organization gathers and interprets relevant information from business and environment and turns it into an environment for marketing action" (p. 11). Little's (1979b) concept of an MDSS goes much further than a marketing information system. Important elements are models, statistics, and optimization, and the emphasis is on response analysis; for example, how sales respond to promotions. In Little's view, MDSS were suitable for structured and semi-structured marketing problems, had a quantitative orientation and were data-driven.

Almost two decades later, Wierenga and Van Bruggen (1997) presented a classification of marketing decision support technologies and tools, and used the term "Marketing Management Support Systems" to refer to the complete set of marketing decision aids. In addition to the *data-driven* marketing management support systems as defined by Little (1979b), marketing management support systems also include *knowledge-driven* systems aimed at supporting marketing decision making in weakly structured areas. Data-driven MMSS use quantitative data analysis techniques and econometric and operations research models. Knowledge-driven MMSS systems use technologies from Artificial Intelligence (AI) such as expert systems, analogical reasoning, and case-based reasoning and have been developed more recently (Wierenga et al., 2008). We provide an overview of the different marketing management support systems in Section 2.

Since the introduction of the first generation of marketing management support systems the conditions for using these systems in companies have greatly improved. The main reason for this is the enormous progress in information technology. Today, almost every marketing decision maker works in an IT-supported environment and is directly and continuously connected to databases with information about customers, sales, market shares, distribution channels, and competitors. Many companies interact directly and continuously with customers and prospective customers through multiple channels like the internet, mobile devices, call centers, and physical stores. All of these interactions generate customer data. The stored customer data concern very detailed information about all phases of customers' purchasing processes from individuals' information search

and transactions activities to post-purchase information and service requests. Increasingly, data are collected at a very disaggregate level. This means that it is possible to collect data for each individual customer for every activity this person undertakes at each point in time. Similarly, information technology has made it possible in many markets to continuously track the behavior and the marketing activities of competitors. Increased computer storage capacities allow for the storage of all of these data and increased processing capacities make it possible to analyze these data (in real-time). Decision support models, increasingly, run real-time and provide instant support about which marketing activity to undertake for a particular customer in a specific situation (Reinartz and Venkatesan, 2008).

When we look at the use of MMSS in practice, we observe that the information retrieval function of MMSS, related to the "what" question mentioned earlier, is used quite extensively. However, this is much less the case for other, more advanced and sophisticated functionalities of MMSS. As a consequence, the impact of marketing management support systems in practice is lower than its potential. About ten years ago, Bucklin et al. (1998) presented an optimistic view on the impact of decision support systems in marketing. They argued that a growing proportion of marketing decisions could not only be supported but might also be automated. They foresaw that close to full automation would ultimately take place for many decisions about existing products in stable markets. However, even in established markets such as for consumer-packaged goods, marketing automation has not taken off yet. Interestingly, in quite different industries, those where the Customer Relationship Management (CRM) approach has taken hold (e.g., financial services, telecommunication, (former) catalogue companies), we now do see the realization of marketing automation. In companies in these industries computers decide, for example, which customers will receive a specific offer and which customer will not. However, MMSS offer many more possibilities and there must be reasons why companies do not use MMSS to their full capacity yet. It is important to identify potential barriers so that these can be removed.

1.2 Content of This Issue

In this issue of Foundations and Trends in Marketing we focus on the center part of Figure 1.1. The main subject is marketing management support systems. Since these systems can only be effective when they are optimally geared toward their users, we also address the users of these systems, the marketing decision makers, as well as the interaction between MMSS and their users.

Section 2 deals with the *demand side* and deals with decision making in marketing (which generates the need for decision support system). We discuss how marketing decisions are made, how they should be made, and the relative roles of analytical versus intuitive cognitive processes in marketing decision making. Section 3 discusses the ORAC classification of marketing problem-solving modes. The next section (Section 4) discusses marketing management support systems in detail. What different types of MMSS exist and how have they developed over time? Marketing management support systems constitute the *supply side* of marketing decision support. In Section 4 we also discuss the match between marketing problem-solving modes and the various types of marketing management support systems. In Section 5 we discuss how MMSS support marketing decision makers and reflect on the best way of combining the strengths of the human decision maker with the strengths of the computer. We also address the impact of MMSS; what are the documented effects of MMSS on decision making? Section 6 discusses how can we improve the impact of MMSS. This is important, given the current under-utilization of MMSS mentioned before. We discuss the conditions for the successful implementation and effective use of marketing management support systems in practice. This issue ends with a discussion of the opportunities and challenges for marketing management support systems as we foresee them.

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