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for One-to-One Marketing

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Abstract

One-to-one marketing on the Web is in its infancy. The Web offers a unique opportunity to mass market products directly to potential buyers who have a high probability for purchase, and to do so at a low cost. The key to unleashing this potential is the tailoring of Web presentation to address individual needs and desires quickly. This capability requires a mechanism for change so the site can adapt to the user. It also requires the ability to store and quickly access databases. We believe that an expert system is uniquely capable of providing this ability.

Introduction

While segmentation has been the marketing standard for many years, there has always been a desire to focus on the individual. Learning about each potential customer's characteristics and needs, and trying to satisfy those needs on an individual basis has tremendous potential for increasing customer satisfaction and loyalty (and corporate profits). Indeed, in certain commercial situations, such as a neighborhood store with a largely repeat clientele, sellers can and do get to know buyers personally. When a customer enters the store, a sales person often asks the customer if he or she wants to buy their "usual" products, or the sales person may suggest products they think the customer will like, based on prior knowledge of the customer's tastes and buying habits. Unfortunately, this type of personal selling has not been feasible in a mass-market because of the difficulty in tracking the characteristics and buying patterns of very large numbers of individuals. However, recent advances in information technology and the evolving sub-field of electronic commerce have begun to make this new "one-to-one" marketing paradigm possible (Peppers and Rogers, 1997, Peppers, Rogers, and Dorf, 1999).

Several information technology advances are involved in one-to-one marketing on a mass scale. The Internet and its World Wide Web permit marketing to any individual with a personal computer and Internet access who visits a seller's web site. Improved database management systems, special purpose databases known as "data warehouses," cheaper and faster computers, and cheaper and larger-scale disk storage devices permit the storage and efficient retrieval of vast amounts of customer data. This data can take the form of customer characteristics such as age, income level, and the like, but it can also take the form of individual sales history, or a history of past interests which may or may not have resulted in a sale. These data categories are critical in developing individualized marketing strategies. Further, advances in supply chain management and the information technologies that back it, make it feasible for the mass customization of products to satisfy customers' specific needs.

One-to-one mass marketing is in its infancy. One example is the practice of Internet bookseller Amazon.com to email its customers, months after a purchase, to suggest targeted follow-up purchases based on the prior ones. Another is the practice of Internet grocers like Peapod.com to track their customers purchases and suggest replenishment on a scheduled or probabilistic basis. Online florists like Flowers.com track birthdays and other personal events for which customers have ordered flowers in the past and send reminders as the same event approaches the next year. The possibilities are endless as more and more personal data and sales history data is accumulated and clever ways are developed to use it. One-to-one mass marketing is the marketing effort of the future, and the effort has just begun.

One-to-one mass marketing depends on the Internet and its World Wide Web. Web sites today typically display the same web pages and content to anyone who visits the web site. But, consider the possibility of a web site that can determine the identity of the visitor and then present a tailored, individualized presentation and site visit experience to that individual. Such tailoring can be done in a number of ways; one of the goals of this project is to investigate and enumerate the different ways. Some examples include the selection of pages to display, the arrangement of the pages, the traversal linkage among the pages, and the page content.

Another issue is the study of the events or tools driving the site visit customization. Some changes in web site presentation can be based on current events, such as stock prices and newspaper headlines. Other tailoring can be based on user specification of interests upon visiting the site (Q: "What do you want to shop for today"? A: "Shirts.") While important in their own ways, these tailoring devices are somewhat pedestrian. We are exploring a much more interesting and very powerful tool that can drive dynamic web site presentation for one-to-one marketing: the expert system.

Expert Systems

The study of expert systems (Harmon, Maus, and Morrissey, 1988; Waterman, 1986) has been a sub-field of the domain of artificial intelligence for some years now. An expert system is a computer application that internalizes a human's expertise to solve a particular problem and then, based on a set of input parameters fed to it, is capable of independently solving such problems. Expert systems have ranged in application from medical diagnosis systems to product defect determination systems to credit approval systems and so on. Expert systems can be written from scratch or can be implemented through general-purpose expert system shell programs. A key element of this research project is to study the feasibility of using an expert system to tailor web site presentations based on the identity of the visitor to the site. The system will be able to draw on previously stored data about the visitor's personal characteristics and sales history with the company. We intend to acquire an expert system shell program and integrate it into a web site to implement the concept we are describing. To our knowledge this has never been done.

A thorough literature search has produced nothing that would be considered previous work in this specific topic area. It must be understood that this is not unusual in the extremely rapidly evolving field of electronic commerce. Academic work in this area typically lags behind commercial developments. In terms of commercial developments in this area, a company called Broadvision claims to market software that is capable of tailoring web sites. A perusal of their web site (broadvision.com) and material that they mailed to us makes no mention of expert systems. We believe it reasonable to assume that, if the company were using an expert system, they would advertise that they were doing so as a further reason for buying their products. We believe that an expert system would add considerable power to the tailoring of web sites, and they would advertise this unique aspect of their products. Apparently this revolutionary work still needs to be accomplished.

Summary

In summary, one-to-one marketing on the Web is in its infancy. The Web offers a unique opportunity to mass market products directly to potential buyers who have a high probability for purchase, and to do so at a low cost. The key to unleashing this potential is the tailoring of Web presentation to address individual needs and desires quickly. The site must identify the visitor quickly and adapt itself to keep the visitor interested before he moves to another site. This capability requires a mechanism for change so the site can adapt to the user. It also requires the ability to store and quickly access databases. We

believe that an expert system is uniquely capable of providing this ability.

The ability to integrate an expert system with a Web site is a primary focus of this research. In addition, we plan to study several aspects of this integration such as the best way to adapt a Web site to individuals (links, content, presentation), and the best information upon which to base the modification (current events, customer history, customer characteristics).

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