The automation of administrative functions in medical practices is virtually inevitable, driven by rising costs, increasing competitive pressures, and the need for complete and legible documentation for reimbursement and litigation (Coile, 1990; Rice, 1992). The use of computers and networks will be key to decreasing healthcare costs, improving the quality of healthcare, and reforming the U.S. healthcare system (Rucker, 1992). Administrative, or office, computing is the first step in this direction (Appleby, 1993). However, recent surveys suggest that office computer systems are not diffusing quickly among medical and dental practices in the United States (Kiser & Nash, 1992; Schmittling, 1989; Schneeweis, 1992), and that offices that are automated may not use their computer systems effectively (Schmidt, 1991). Diffusion and usage problems might be due to inadequate system design and functionality (Caldwell & McPartlin, 1994).

The automation of administrative functions in medical practices is important for decreased healthcare costs and healthcare reform. However, the diffusion of medical practice management systems has been slow and systems in use are not effectively utilized. This paper discusses practitioners’ use and evaluation of their office systems. Although not all propositions were supported, it is clear that office computer system use is most influenced by practitioners’ perceptions of the systems’ ease of use and that satisfaction is related to perceived system usefulness. Involvement of medical and administrative staff in the acquisition of the system is related to satisfaction with the system, though not usage. A key finding of the study is that there are different groups of medical practice management system users, each with different perceptions and needs. This heterogeneous constituency must be considered by vendors and designers of medical office systems, as well as by those acquiring the systems. Since ease of use and usefulness are important, it is suggested that they be emphasized in the design of medical practice management systems and considered by doctors when a system is acquired.

Related Research and Research Questions

Related research and theory are reviewed in this section and the research questions investigated are presented in Table 1. Variable measures are described and summarized in Table 2.

System Acquisition

Many studies of the acquisition of information technology have been based on innovation diffusion frameworks (e.g. Brancheau & Wetherbe, 1990; Huff & Munro, 1985; Rai & Howard, 1993). This study draws from innovation diffusion literature to examine the acquisition of practice management systems. It is important to know the characteristics of early adopters and to identify diffusion and communication channels to further change among the remaining population (Rogers, 1983). This information is therefore important for the diffusion of medical office systems to those practices that are not yet automated.
Adopter Characteristics

The diffusion of innovations, such as medical practice management systems, follows an S-curve. Pioneers include the first 2.5% of people or units adopting the innovation. These are followed by early adopters (the next 13.5%), the early majority (the next 34%), the late majority (the next 34%), and the laggards (the last 16%) (Rogers, 1983). Prior surveys indicate that both medical and dental systems are near the middle of the diffusion curve, with the early majority now adopting, and that dental systems are somewhat behind medical systems (Kiser & Nash, 1992, Schmittling, 1989; Vincent & Schneeweiss, 1992).

Earlier adopters of innovations have been found to be younger, more educated, and exposed to more communications outside the organization or normal social system than later adopters (Brancheau & Wetherbe, 1990; Coleman, Menzel & Katz, 1959; Rogers, 1983). Younger dentists and specialists have been more likely to have office computer systems (Kiser & Nash, 1992), although in general, the relationship between age and early adoption of innovations has been inconclusive (Rogers, 1983). Additionally, larger organizations are more likely to adopt new technology than are smaller ones (Kiser & Nash, 1992, Rai & Howard, 1993, Rogers, 1983). Thus, it was expected that physicians and dentists in automated practices would be younger, more specialized, and have more professional affiliations (and hence more external communications) than their counterparts in practices without office computer systems, and that group practices would be more likely to be automated than would solo practices (Table 1, P1 and P2).

In this study, practitioners’ year of graduation from medical or dental school was used as a surrogate for age – the later the graduation date, the younger the doctor is likely to be. Doctors were asked to indicate their specialty, the number of professional associations they belonged to, and the number of professional journals they received. Practice size was provided by the office manager as the number of doctors in the practice.

Information Sources

According to innovation diffusion literature, communication channels external to an organization or social group (e.g. professional journals or meetings) and mass media (e.g. magazine articles or advertising) are key to making potential adopters aware of a new technology. Interpersonal communication channels, and those internal to a social system, are more important in persuading an individual to adopt a particular technology and in acceptance of it after adoption (Brancheau & Wetherbe, 1990; Rogers, 1983).

However, studies of the adoption of new medications among physicians indicate that medical innovations may

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Table 1: Propositions

| P1: | Physicians or dentists in practices using office computer systems: (a) are younger than their counterparts in practices not using office computer systems. (b) are more likely to be specialists than their counterparts in practices not using office computer systems. (c) have more professional affiliations than their counterparts in practices not using office computer systems. |
| P2:* | Practices using office computer systems are larger than unautomated practices. |
| P3: * | Interpersonal, professional communication channels are the primary information source in a physician or dentists’ decision to purchase a particular system, while interpersonal, professional channels and sales personnel will be relied on for initial awareness information. |
| P4: | Usage of an office computer system is indirectly related to: (a) satisfaction with the system. (b) the amount of training received. (c) the perceived ease of learning the system. (d)* its perceived ease of use. (e) the system’s perceived usefulness. |
| P5: | Satisfaction with an office computer system is directly related to: (a)* the perceived ease of learning the system. (b)* its perceived ease of use. (c) amount of training received. (d)* the system’s perceived usefulness. |
| P6: | Different types of end users have different (a) levels of computer usage. (b)** perceptions of the value of practice management systems. |
| P7: | Doctors will evaluate the office computer system lower than will administrative personnel. |

Notes

* p<.05, one-tailed test  ** p<.025, two tailed test  * Statistical tests were not done, but evidence supports this proposition.  ** Significant (p<.05) for one group, but not overall.
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