IDEA GROUP PUBLISHING
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ITB12754

This paper appears in the book, *Emerging Trends and Challenges in Information Technology Management, Volume 1 and Volume 2* edited by Mehdi Khosrow-Pour

Adoption of Pharmaceutical Sales Force Automation Systems: An Exploratory Study

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INTRODUCTION

The pharmaceutical industry in the United States spends about $15 billion per year advertising its products to the medical profession [1]. Pharmaceutical detailing, which is using sales representatives to call on physicians to promote products, accounts for about 45 percent of this spending [2]. In order to help sales representatives track sales leads, sales, service requests, and other sales-related information, many pharmaceutical companies have adopted sales force automation (SFA) systems. While pharmaceutical SFA systems adoption is increasing, little systematic research has been done to understand the factors associated with the adoption of pharmaceutical SFA systems.

This paper explores the factors contributing to the adoption of pharmaceutical SFA systems with a focus on the system characteristics specifically related to pharmaceutical sales tasks and the effects of those system characteristics on the perceptions of usefulness and ease of use within the technology acceptance model (TAM). The study uses data from a survey of sales representatives at a large pharmaceutical company that has adopted SFA systems. On a theoretical level, the study tests TAM in a context of pharmaceutical SFA systems and extends the line of research on TAM by examining system characteristics as antecedents of the constructs of TAM. On a practical level, the findings on the systems characteristics associated with the TAM constructs can prove helpful to those who use or plan to use pharmaceutical SFA systems.

CONCEPTUAL BACKGROUND

TAM [3] posits that perceived usefulness and perceived ease of use are important factors that determine the user's attitude towards his or her intention to use and actual usage of information systems. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance," while perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" [3]. Using the cases of electronic mail system, file system, and graphics packages, Davis [3] showed that both perceived usefulness and perceived ease of use have direct effects on intention to use and actual usage, while perceived ease of use also has an indirect effect on intention to use and actual usage via perceived usefulness. Since Davis [3] introduced TAM, numerous empirical studies have validated TAM across different user populations and information systems. Previous studies on TAM in general agree that TAM is a powerful and parsimonious framework to predict and explain the adoption of information systems.

Further, Davis called for "future research (to) consider the role of additional (external) variables within TAM" [4]. Previous research has identified system characteristics as a major category of external variables of TAM [5, 6, 7, 8]. Prior studies that included system characteristics within TAM demonstrate that system characteristics have direct or indirect effects on both perceived usefulness and perceived ease of use of information systems. As noted by Hong, et al [9], however, most of these studies do not highlight the effects of individual system characteristics on the constructs of TAM, since they either used a dummy variable to represent different information systems or adopted a single overall construct to substitute for the system characteristics. Therefore, there is a need for research to investigate the individual effects of specific system characteristics on the constructs of TAM. The current study attempts to identify the SFA system characteristics specifically related to pharmaceutical sales tasks and to examine the individual effects of those characteristics on the constructs of TAM.

METHODS AND DATA

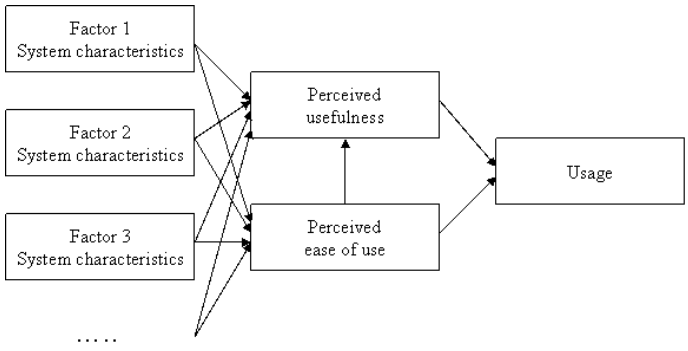
Pharmaceutical SFA systems involve system characteristics that differ from other SFA systems. In order to identify the SFA system characteristics specifically related to pharmaceutical sales tasks, we first examined the process of pharmaceutical sales with the SFA system in consultation with several sales representatives at the target pharmaceutical company. Then, we developed a list of SFA system characteristics specifically related to pharmaceutical sales tasks, and asked the survey respondents to rate the importance of each SFA system characteristic in successfully performing their sales tasks. The extent of their agreement on the importance of SFA system characteristics were measured using 7-point scales ranging from 'not important at all'(= 1) to 'very important' (= 7). The mean ratings of SFA system characteristics identified were found to be all high enough to confirm that the characteristics under consideration are in fact important in successfully performing pharmaceutical sales tasks.

Figure 1 shows this study's research model, which incorporates the factors of SFA system characteristics as antecedents of perceived usefulness and ease of use in TAM. The research model consists of three latent variables including perceived usefulness, perceived ease of use, and usage, and factors of SFA system characteristics. The research model posits that SFA systems usage is influenced by perceptions of usefulness and ease of use of SFA systems, which in turn are influenced by the factors of SFA system characteristics.

The items about the SFA system characteristics were also measured by the extent of the user's satisfaction with the characteristics. User satisfaction has been proposed as "a substitute for objective determinants of information system effectiveness" [10], as the most surrogate measure of system success [11], and as "the most useful assessment of system effectiveness" [12]. This study adopted the items of perceived ease of use, perceived usefulness, and usage from the previously validated inventory and modifies them to suit the current context. The items of perceived usefulness and perceived ease of use were measured by the extent of the user's agreement on the items. The items of usage included usage frequency and usage volume. Usage frequency was measured as the number of visits to physicians that the user makes on average each day, as the user has to use the SFA system at each visit. Usage volume was measured as the number of minutes that the user uses the SFA system on average per each visit to physician.

Responses were received from 148 sales representatives, representing a response rate of 51 percent, but 20 responses were not usable due to lack of data. The sample comprised of the remaining 128 responses, of which 51 (40 percent) were male and 74 (58 percent) were female (three

Figure 1. Research model



respondents did not provide information on their gender). On average, the respondents have been in the current pharmaceutical sales position for about three years with pharmaceutical sales experience of about seven and half years. They make about eight visits to physicians on average each day. On average, they use the SFA system for about 15 minutes per visit to a physician and about 55 minutes elsewhere (e.g., home) per day. On average, the respondents have used the SFA system for about 11 months for pharmaceutical sales tasks.

The specific procedures of data analysis, which are currently being conducted, include the confirmatory factor analysis for the reliability and validity tests and the structural equation modeling and path analysis to estimate parameter values for the linkages in the model. We hope to report on the results of data analysis at the conference.

RESULTS

The main results of this study will be the identification of specific system characteristics associated with the adoption of pharmaceutical SFA systems and the effects of those system characteristics on the perceptions of usefulness and ease of use of the systems. On a practical level, such understanding will prove a helpful viewpoint for those who use or plan to use pharmaceutical SFA systems. On a theoretical level, the research model along with empirical data will contribute to capturing the factors associated with SFA systems adoption and extending the line of research on TAM.

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