

The Impact of Gender and Experience on the Strength of the Relationships Between Perceived Data Warehouse Flexibility, Ease-of-Use, and Usefulness

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ABSTRACT

Experienced end-users are more likely to leverage the flexibility embedded within an information system. System flexibility influences ease-of-use perceptions, which influence user perceptions of system usefulness. Because men tend to have more experience with information systems and possess less computer anxiety than women, the strength of the relationship between user perceptions of system flexibility and ease of use should be significantly stronger for men. Although the authors found that the strength of this relationship was significant for men and women, the relationship was significantly stronger for women. No significant differences were found based on user differences in the length of their experience with a data warehouse. These findings challenge the conventional wisdom about the effect of gender and experience on system use, and have ramifications for both researchers and practitioners interested in optimizing data warehouse usage.

Keywords: Data Warehousing, End Users, Experience, Gender, Individual Characteristics, IS Flexibility

INTRODUCTION

Data warehousing continues to be one of the hottest technologies in use by firms today. The

Gartner Group estimates that the data warehousing market reached \$29 billion by 2006 (Ramamurthy, Sen, & Sinha, 2008), due in part to the rapid growth in customer relationship management (CRM) and business intelligence (BI) applications. But despite its widespread adop-

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tion, data warehousing remains an expensive and risky investment. Installation costs often exceed \$50 million (Watson, Annino, Wixom, Avery, & Rutherford, 2001), and nearly half of all data warehousing projects suffer from low acceptance or outright failure (Ramamurthy et al., 2008; Whiting, 2003). Factors contributing to low use and failure include technical difficulties (Mazón & Trujillo, 2008), failing to reorient the corporate culture (Cooper, Watson, Wixom, & Goodhue, 2000), and end-user difficulties (Payton & Zahay, 2003). The present research focuses on the latter.

With a data warehouse, end-users have flexible access to unprecedented amounts of data that can be analyzed via multiple input and output methods (Agosta, 2000; Chen, Soliman, Mao, & Frolick, 2000). This flexibility requires that users understand the data warehouse's complex data structures and sophisticated querying and reporting tools (Inmon, 2002). However, because ease-of-use is a key determinant of system usage (Ajzen, 1991), the flexibility that should be a strength can become a detriment when it leads the user to perceive that the system is difficult to use (Davis, 1989; Goodwin, 1987). Thus, flexibility can act as a help or a hindrance depending on the end-user.

In order to maximize organizational performance, companies must maximize the performance of their employees. Because both stable and dynamic personal characteristics can have a strong impact on job performance (Ng, Eby, Sorensen, & Feldman, 2005), it is important to have a better understanding of how personal characteristics impact data warehouse usage. Identifying those end-users who would find the data warehouse's flexibility as a help rather than a hindrance would be of interest to managers seeking to maximize the use of their data warehouse. Two characteristics that are thought to affect information systems (IS) perceptions and usage are user experience and user gender. Experienced individuals typically outperform their less experienced counterparts (Staples, Hulland, & Higgins, 1999), and this is generally the case in IS adoption as well (Venkatesh & Morris, 2000).

With regard to gender, a substantial body of early research found that men tend to have an advantage over women in IS experience, perceptions and usage (Fetler, 1985; Morrow, Prell, & McElroy, 1986). However, these early findings have been criticized for methodological and interpretive weaknesses (Adam, Howcroft, & Richardson, 2004; Ahuja, 2002), and some recent IS research has reported diminishing differences between genders (Morris, Venkatesh, & Ackerman, 2005).

Thus, the purpose of the present article is to explore the impact of these two personal characteristics, experience and gender, on the central perceptions that impact data warehouse use.

BACKGROUND, CONCEPTUAL MODEL AND HYPOTHESIS DEVELOPMENT

Data Warehousing and End-User Ease-of-Use Problems

Data warehousing came to prominence in the 1990s as a result of technological advance and business need (Wixom & Watson, 2001). Rapid improvements in server capacity, communication technology and software functionality made large-scale data storage, retrieval and analysis feasible. Businesses mined their own data to gain new insights into operations. At the same time, the Internet made new sources of customer, vendor, market and competitor data available, and businesses mined these new sources to gain competitive advantage (Watson, Fuller, & Ariyachandra, 2004). Not surprisingly, businesses flocked to data warehousing technology, with reports of data warehousing success common (Foote & Krishnamurthi, 2001).

But despite the apparent successes, researchers began finding evidence that end-users were having difficulty working with their data warehouses. Chen et al. (2000) found that even users with a year or more of system use often have low ease-of-use perceptions. Cooper et al. (2000) reported that after a year of data

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