Segmentation of Information Systems Users: The Finite Mixture Partial Least Squares Method

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ABSTRACT
The Expectation-Confirmation Model of Information Systems Continuance (ECM-IS) explains antecedents that influence IS users' behavior and affect their decision whether to continue or discontinue information system (IS) using. ECM-IS emphasizes differences between initial acceptance and IS continuance. For companies that deal with the design and software development, IS continuance is retaining of existing customers of product and services. This study extends the ECM-IS by accounting for unobserved heterogeneity. The Finite Mixture Partial Least Squares (FIMIX-PLS) methodology is applied for identification of distinctive customer segments. Segmentation of IS users was made on the basis of cognitive beliefs and affect influencing one's intention to continue using IS and two different segments of users were derived. The first segment comprises 65.6%, and the other one 34.4% users. The ECM-IS explained 51.9% of IS continuance intention and 20.7% of satisfaction for the first segment, while for the second segment the ECM-IS explained 98.1% of IS continuance intention and 91.3% of satisfaction.

Keywords: Expectation-Confirmation Model of IS Continuance (ECM-IS), Finite Mixture Partial Least Squares (FIMIX-PLS) Method, Information System (IS) User Behavior, Market Segmentation, User Satisfaction

INTRODUCTION
As organizations continue with increasing investments in information technology (IT), they become aware of the importance of IT acceptance and its usage as a precondition for achievement of higher productivity with IT. Past research pays more attention to the examination of factors affecting users in the first stage of new IT acceptance (and the use of an IT for the first time) rather than to factors affecting users to continue their use of one IT after they had accepted that technology (Bhattacherjee, 2001; Karahanna, Straub, & Chervany, 1999).

DOI: 10.4018/joeuc.2013100101
According to Bhattacharjee (2001), the eventual success of a new technology is more dependent on the users’ continual use of that IT than on its initial acceptance, since irregular and inefficient IT use after initial acceptance can cause adverse costs, or result in a loss of effort to develop a certain IT. For example, for online services like online travel agencies, online banking services and online newspapers, continuance is the most important factor for survival on the market (Bhattacherjee, 2001; Reichheld & Schefter, 2000).

The continuance of such services is, in fact, retention of existing customers and it affects the profitability of a company offering such services (Reichheld & Schefter, 2000). Satisfaction is a major driver of customer retention, and therefore, achieving high customer satisfaction is a key goal of practitioners (Fornell, Johnson, Anderson, Jaesung, & Bryant, 1996; Guo, Xiao, & Tang, 2009; Homburg & Rudolph, 2001; McAlexander, Kim, & Roberts, 2003; Wang, Sy, & Fang, 2010; Wen, Prybutok, & Xu, 2011).

Emphasizing significant differences between initial acceptance and IS continuance, Bhattacharjee (2001) develops and tests empirically the Expectation-Confirmation Model of IS Continuance (ECM-IS) based on the Expectation-Confirmation Theory (ECT). Researchers, in a great measure, use the ECT in the literature on the behavior of consumers for research on their satisfaction, post-purchase behavior (e.g. repurchase, dealing with consumers’ complaints) and marketing services in general (Anderson & Sullivan, 1993; Dabholkar, Shepherd, & Thorpe, 2000; Oliver, 1980, 1993; Patterson, Johnson, & Spreng, 1997; Tse & Wilton, 1988). They demonstrate the predictive ability of this theory on many products and services in the context of repurchase of products and continuance of services, including car repurchase (Oliver, 1993), video-recorders (Spreng, MacKenzie, & Olshavsky, 1996), restaurant services (Swan & Trawick, 1981), and business oriented professional services (Patterson et al., 1997).

For many companies that deal with the design and software development, IS continuance is retaining of existing customers of products and services. Giving importance to IS continuance versus new IS acceptance is the same as emphasizing the importance of retaining the existing customers versus winning new ones. Databases of users, market shares and the incomes of these companies depend on the number of permanent users who continue using their products and services. The importance of emphasizing continuance over acceptance is evident from the fact that the cost of attracting new customers happens to be much higher than retaining current customers (Kurtz & Clow, 1992), bearing in mind the cost of looking for new customers, establishing relationships with new customers and initiation of new customers to use the IS. Since the cost of obtaining a new consumer is very high and the profitability of a loyal consumer grows with the relationship’s duration, it seems that understanding retention is a key to long-term profitability (Anderson & Swaminathan, 2011; Bolton, Kannan, & Bramlett, 2000; Bolton, Lemon, & Verhoef, 2004; Reichheld, 2001).

Wendell Smith (1956) introduced the concept of market segmentation in the marketing literature arguing that goods would find their markets of maximum potential as a result of recognition of differences in the requirements of market segments. Marketing segmentation resulted in a more logical manner of meeting customers’ needs. Segmentation is a division process of the existing market in particular subgroups of customers with the same needs, namely characteristics, and a selection of one or more segments which will be targeted with a specially shaped marketing mix. Segmentation helps to homogenize market heterogeneity (Dibb, Stern, & Wensley, 2002) by means of dividing a heterogeneous market into relatively homogenous segments.

Foedermayr and Diamantopoulos (2008) reveal a widespread use of several segmentation bases simultaneously in their analysis of empirical studies on actual segmentation practices of firms. They report that demographics, geographic and economic variables are applied most frequently, as well as psychographics.
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