Looking at Behavioral Innovativeness: A Rasch Analysis

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ABSTRACT

While there has been research on the diffusion of a particular type of innovation, few if any studies have examined the acceptance of a set of innovations (behavioral innovativeness) over time. This study, using the Rasch methodology, found evidence that computer hardware innovations are adopted in a particular order. The same could not be said for computer software, whose acceptance may be application-based. This study applied a theoretical framework based on the diffusion of innovation literature (Rodgers, 1995). Data was collected via a telephone survey of 302 computer users. Scores obtained from the Rasch analysis were used as the dependent variable (that of behavioral innovativeness) in a regression analysis, against factors such as overall innovativeness, use innovativeness, opinion leadership/acceptance, product class knowledge, and use of sources of information.

Keywords: behavioral innovativeness; Rasch analysis

INTRODUCTION
Steenkamp, Hofstede, and Wedel (1999) estimated that two-thirds of new products fail, at an average cost of around US$15 million for each such product. However, they also noted that many major companies, such as Gillette and Hewlett-Packard, rely on new products for profits and growth. Thus, consumers’ acceptance of new products is vital, which means a greater understanding of the consumer diffusion process is crucially important to many organizations.

Rodgers’ (1958) initial research suggested the kinds of consumers who
would be most willing to accept innovations, and this group has generally been termed “innovators.” It is believed that such consumers influence opinion leaders who, through word of mouth, spread an innovation through a population. Innovation researchers have tended to examine this process by looking at the acceptance of one product at a time, although Midgley and Dowling (1993) were a notable exception. However, Gatignon and Robertson (1985) have argued that for some products such as personal computers and entertainment systems, multiple purchases are possible, as is a migration to better performing units. In such categories, the purchase of ancillary units (or perhaps software in the case of computers) is also possible. They suggested that in such situations, research needs to focus on how an innovation fits into existing consumption patterns, rather than looking at a single product’s acceptance.

This article is an attempt to broaden our understanding of the diffusion process by considering diffusion as a product class phenomenon. It is suggested that the acceptance of innovations within a product class depends on people’s ownership of related items within that class, although use innovativeness and past purchase behavior may influence the adoption of new items within the class (e.g., more online purchasing can lead to a demand for computer security software). These issues are addressed in the review provided in the next section.

It can be argued that consumers do not purchase individual computer items, but rather packages of hardware and software. A good way to examine the acceptance of product class assortments or items belonging to a set of related products is to use Rasch modeling, as it models the acquisition of various technologies from established products to innovations, and consequently, this approach was used in the present study. The study also examined some of the factors that might influence the acceptance of information technologies, and these factors are also discussed in the subsequent review.

A REVIEW OF RELEVANT LITERATURE

The Dependent Variable: Behavioral Innovativeness

As discussed earlier, the present study investigated the adoption of a set of innovations within a product class (Midgley & Dowling 1978). A product class is a hierarchy of items, or units that can be purchased over time. In the case of personal computers, these units or items can be hardware, software, or peripherals such as printers and modems. Innovative behavior, or behavioral innovativeness, can be considered to be to the extent to which a user adopts most of these items, with “newer” items being the most recently purchased. However, a major problem, noted by Midgley and Dowling (1978), is the availability of time series data through which forecasts of innovative behavior
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