Consumer Purchase Decisions
Under Asymmetrical Rates
of Technological Advance
and Price Decline

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ABSTRACT

Prior research has shown that when making high tech purchase decisions, consumers consider not only the relative advantage afforded by currently available products, but also the relative advantage expected from future generation products. Additionally, empirical evidence suggests that prices for high tech products often decline faster than the technology advances. This research takes both these findings into account and investigates consumer purchase decisions for high and low tech products under asymmetrical rates of technological advance and price decline. Although consumers generally prefer the latest technological generation of a product, level of technological sophistication (high vs. low tech), rate of technological change and price decline, and expectations regarding future product introductions were found to moderate the effect of technological generation on preference.

Keywords: Behavioral Decision Theory, Consumer Expectations, Consumer Purchase Decisions, Marketing Management, Technology Choice

INTRODUCTION

Given that a technology generally advances over time while its price declines, the product introduction decisions faced by high tech firms are complex. For example, when should Apple introduce the iPad 3, the next generation of its popular tablet computer? What level of improvement and features should the iPad 3 afford over the iPad 2 before it is released? How should the iPad 3 be priced relative to the iPad 2, and when/should support for the iPad 2 and the original iPad be withdrawn after the iPad 3 is introduced?

In order to make such product introduction decisions, managers need to understand how consumer expectations, induced by firms’ product introduction strategies, may influence purchase behavior. Managers also need to understand how the perceived rates of technological advance and price decline, also induced by firms’ strategic decisions, may impact purchase decisions across multiple generations of a product. Additionally, managers need to understand how perceptions of the level of technological
sophistication associated with a product may influence purchase behavior. The goal of this research is to develop and test a model of consumer purchase behavior that incorporates the effects of future product expectations, rate of technological advance and price decline, technological generation, and level of technological sophistication on consumer purchase decisions. The paper will be organized as follows. In the next section, the literature relevant to technological purchase decisions is reviewed. Following the literature review, a theoretical model of consumer purchase behavior is presented. The study used to test the model is then described. Finally, conclusions and future research directions are offered.

LITERATURE REVIEW

Of the five characteristics Rogers (1995) suggests influence purchase decisions, relative advantage has received by far the most research attention (Gatignon & Robertson, 1991; Harmancioğlu, Droge, & Calantone, 2009; Holak, Lehmann, & Sultan, 1987; Olshavsky & Spreng, 1996). Relative advantage reflects the perceived superiority of a product over an incumbent state and is based on new and/or improved capabilities and features, lower economic costs (price advantage), or the enhanced social prestige garnered from owning the product. For example, a consumer is more likely to purchase an iPad 2 than the original iPad because doing so will afford her a greater relative advantage (e.g., thinner, lighter, faster processing speed, etc.) and the attendant social prestige that results from owning the latest generation of a high tech product.

Such purchase actions, however, are at odds with other researchers who claim that the relative advantage expected from future products also influences purchase decisions (Bechwati & Qualls, 2001; Boone, Staelin, & Lemon, 2001; Dhar, 1997, 1996; Dhebar, 1994, 1996; Greenleaf & Lehman, 1995; Grenadier & Weiss, 1997; Holant, Lehman, & Sultan, 1987; Kunz, Schmitt, & Anton Meyer, 2011; Lowery, 1991; Ozer, 2011; Song & Chintagunta, 2003; Winer, 1985). Levinthal and Purohit (1989) and Bridges, Yim, and Briesch (1995) offer analytical and empirical support, respectively, that expectations regarding future product introductions influence current purchase behavior (Banerjee & Sarvary, 2009; Decker & Gníbba-Yukawa, 2010; Roy, Chan, & Cheema, 2007). Guiltinan (2010) combines prior research on economic- and behavioral-based research to model consumer purchase decisions for durable goods that incorporates both rational and irrational consumer behavior (e.g., price and expectations, respectively; Shih & Schau, 2011).

Importantly, Lowery (1991) and Greenleaf and Lehman (1995) find that expectations regarding a next generation product are often cited as reasons for not buying the current generation product (Grenadier & Weiss, 1997; Winer, 1985). Similarly, Holak, Lehman, and Sultan (1987) suggest that consumers who expect higher levels of technological improvement are more likely to defer purchase of the latest technological offering (Dhebar, 1994, 1996; Gatignon & Robertson, 1991).

Boone, Lemon, and Staelin (2001) reconcile these findings with those from the relative advantage literature and find that expectations can influence purchase decisions over and above relative advantage, depending on which is more salient (Auh & Shih, 2009; Sweeney, McFarlin, & Inderrieden, 1990; Yitzhaki, 1982; Ziamou & Veryzer, 2005). Thus, if the release of a next generation iPad 3 is made salient, a consumer with an original iPad is less likely to purchase an iPad 2, despite its relative advantage, in favor of the forthcoming, more advanced iPad 3 (Gordon, 2009).

Researchers have also shown that perceptions of the rates of technological change and/or price decline for a high tech product can influence firm-level purchase decisions. Balcer and Lippman (1984) suggest that firms are less likely to purchase a current generation product under rapid technological change due to the uncertainty surrounding a next generation product introduction (Bridges, Coughlan, & Kalish, 1991; Eng & Quaia, 2009; Weiss,
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