



Forecasting consumer perception of innovativeness



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ABSTRACT

How innovative is a new product to consumers? *Why* is it perceived to be innovative and does perceived innovativeness affect consumer intention to adopt new products? Some investigations have explored consumers' perceptions of innovativeness, but this research is fragmented and contains no comprehensive definition and examination of the construct of "consumer perceived innovativeness" (CPI—how innovative the product is from the consumer's perspective). This study proposes a new conceptualization for CPI based upon extant theory, qualitative research and two quantitative pilot studies. It then identifies and tests key causes and consequences of CPI on a national sample of consumers using a range of different innovations. This allows addressing the "so what?" (consequences) and the "how do you manage it?" (causes). The research extends work in the new product development area by (i) defining CPI within its nomological net and proposing an operational measure based on psychometric testing, (ii) suggesting that affect is more usefully viewed as a consequence of CPI rather than a dimension, and (iii) highlighting the important, yet often overlooked role, of perceived technology newness. These findings provide managers with a useful and practical theory for understanding and influencing consumer perceptions of a product's innovativeness.

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1. Introduction

Scholarship in innovation has increasingly sought to understand diffusion of new products by examining individual consumer behavior processes (Alexander et al., 2008; Eriksson and Nilsson, 2007; Hoeffler, 2003), whereby an innovation is only new if it is *perceived* to be new by consumers (Rogers, 2003). But *how new* is "new"? Or, in terms of this study's focus, how innovative is an innovation? A better understanding of consumer perception of innovativeness may help to explain and forecast consumers' unanticipated and often negative reactions to new products that firms had expected would be successful (perhaps based on management's perception of the product's innovativeness), and as such, provides an important and distinct contribution to the literature on consumer acceptance of innovations and innovation management. New product and service idea screening continues to attract a significant level of research attention, and originality, uniqueness and value to the consumer remain key criteria by which innovations are assessed and judged (Magnusson et al., 2014).

The literature contains neither agreement as to how to define and measure perceived innovativeness nor an existing model of its antecedents and consequences. The limited research in the area of consumer perceptions of innovations, and its potential importance, is

reinforced by Rogers (2003), p. 96, who argues that most innovation studies examine the issue of who adopts innovations, yet only a minority examine *attributes of innovations* that may lead to faster diffusion (e.g., how innovative a product is perceived to be). The purpose of this study is to address two main research questions: (1) What is perceived innovativeness and how should researchers define, conceptualize and measure it?, and (2) What are the antecedents and consequences of perceived innovativeness and how can the relevant constructs be put together into a logical and useful theory to better understand consumer reactions to innovations?

This study contributes to the literature on consumer acceptance of innovations by developing a model of *consumer perception of innovativeness*, starting with introducing a conceptualization of consumer perceived innovativeness (CPI), testing alternative conceptualizations, extending into a full model of consumer perception of innovativeness (with antecedents and consequences), and measuring and testing the CPI conceptualization and the full model. The study also is the first to show how affect is an important aspect of the innovation evaluation process. A better understanding of the consumer side of innovation may also help explain the somewhat inconsistent relationship between product innovativeness and new product success (Henard and Szymanski, 2001; Szymanski et al., 2007; Verdegem and De Marez, 2011). However, still the literature provides little consensus on *how consumers perceive innovations* (Garcia and Calantone, 2002), and specifically, little consensus on what innovativeness is, as rated by consumers. Therefore, this study contributes to the literature on

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innovation management by addressing calls from significant and highly cited studies in the field to "...examine the dimensions and effects of the newness of products to their prospective customers." (Danneels and Kleinschmidt, 2001, p. 371).

This article begins by distinguishing between the related concepts of product innovativeness and perceived innovativeness, and then identifies the important constructs involved in examining CPI through qualitative research. Two pilot studies are designed to compare competing conceptual models derived from the literature and the qualitative research study (pilot study 1) and to test the stability over time of the new measures developed (pilot study 2). The findings from the pilot studies are then integrated with literature in the area of consumer innovation adoption to organize CPI and its related constructs into a theory of causes and effects. This research decomposes attitudes into hedonic and utilitarian components using the HED-UT scale (Voss et al., 2003) to show how innovations evoke affective as well as cognitive responses. These relationships are tested quantitatively on a national sample to provide confirmatory evidence of the relationships proposed (main study), including tests of moderating links from key constructs such as perceived complexity, personal relevance and perceived risk.

2. Product innovativeness and perceived innovativeness

2.1. Product innovativeness

Researchers have often studied consumer acceptance of innovations in relation to product innovativeness. Products may be incrementally new, really new, or radically new, depending on whether they are marketing innovations or technology innovations and whether they are macro or micro level innovations (Garcia and Calantone, 2002). However, this categorization does not address the issue of newness to the customer, *as rated by consumers*, and "although the consumer-oriented approach has been endorsed by some advertising and marketing practitioners, it has received little systematic research attention" (Schiffman and Kanuk, 2004, p. 520).

Product innovativeness is often related to (i) key innovation characteristics (i.e., relative advantage, compatibility, complexity, trialability and observability), (ii) adoption risk, and (iii) the degree of change from established behaviour patterns (Danneels and Kleinschmidt, 2001). However, Danneels and Kleinschmidt's (2001) conceptualization of product innovativeness has yet to be directly tested empirically. Their exploratory analysis was based on secondary data from new product development managers, obtained through the NewProd II database from the 1980s. Other perspectives in the contemporary consumer behavior literature (e.g., Hoyer and MacInnis, 2008) typically view factors such as compatibility, trialability, and complexity as consumer learning requirements that influence the speed of diffusion, rather than as dimensions of innovativeness per se. Such complex relationships between a variety of closely related and often discussed concepts remain to be empirically examined in relation to perceived innovativeness *as perceived by consumers*.

New product development researchers have worked on empirical measures of product innovativeness (see Garcia and Calantone, 2002 for a review and reconceptualization of prior studies) derived from more consumer-oriented measures. For instance, Gima (1995) provides measures of, and empirically distinguishes between, newness to the customer and newness to the firm, defining newness to the customer as the degree of effort required to adopt a new product. Other new product development researchers have defined product innovativeness as new product creativity (Moorman, 1995; Moorman and Miner, 1997), novelty (Andrews and Smith, 1996; Sethi et al., 2001), a combination of product superiority to the customer and adoption difficulty to the customer (Lee and Colarelli O'Connor, 2003), or a combination of the extent to which the new product "...offers

new benefits, incorporates new features, is superior to other products, and requires change in consumer attitude, behavior, and learning effort..." (Talke and Colarelli O'Connor, 2011). Some new product development researchers view product innovativeness as a separate, singular construct consisting of three dimensions (technological discontinuity, market discontinuity, and customer discontinuity) that is distinct from related constructs such as product advantage (McNally et al., 2010). On the other hand historical innovation scholars (Chandy and Tellis, 2000; Sorescu et al., 2003) have typically used retrospective classifications based on experts as raters (e.g., academics or information obtained from public bodies such as the Food and Drug Administration), and define innovativeness as "the extent to which the technology involved in a new product is different from prior technologies [and] the extent to which the new product fulfils key customer needs better than existing products" (Chandy and Tellis, 1998). Likewise, Sorescu and Spanjol (2008), p. 115 define breakthrough innovations as "...new products that are the first to bring novel and significant consumer benefits to the market..." and incremental innovations as "...new products that do not deliver novel and significant consumer benefits to the market...", explicitly recognizing the role of novelty and superior consumer benefits. However, many of these studies, while acknowledging the importance and necessity of the consumer's perspective, use *managers* or *experts* as raters, not consumers. One exception, which compares the responses of expert raters with those of the general public, for a new lottery concept, found that experts were no more accurate in their predictions of the success of a new concept (Faulkner and Corkindale, 2009). As pointed out by Szymanski et al. (2007), p. 50, "...studies on product innovativeness rely almost exclusively on managers' perceptions of consumers' views of innovativeness." Furthermore, the variety of somewhat different conceptualizations is also evident.

Sorescu et al. (2003) specifically highlight the prevalence of such methodological issues, noting the limitations of managerial raters (e.g., self-report bias) and expert raters (e.g., memory and retrospection bias) in evaluating product innovativeness, but do not contrast these raters with consumer raters. Using managers as raters is typically justified on the basis of managers' collective wisdom about their customers (Lee and Colarelli O'Connor, 2003). Yet pilot studies show that managers' perceptions of product innovativeness explain only 56% of the variation in consumer perceptions of innovativeness (Andrews and Smith, 1996; Sethi et al., 2001).

It is likely that some degree of correlation exists between manager and consumer ratings, but if so, it is evidence of predictive validity rather than construct validity. In fact, one study makes this point by depicting that product innovativeness leads to perceived innovativeness in their reconceptualization of product innovativeness (Garcia and Calantone, 2002). The fate of innovations such as the Segway personal transporter may be the result of managers tending to systematically overweight the value of their innovations, while consumers tend to systematically underweight the value of these innovations because of loss aversion (Gourville, 2006). Perhaps managerial overvaluing occurs especially in the case of new technology, which managers understand better than consumers. This leads to the question of what constitutes perceived innovativeness and how researchers should define, conceptualize and measure it. The perspective taken here aligns with Danneels and Kleinschmidt (2001), p. 362 who state "...customers themselves are the only proper informants regarding how new they perceive a new product to be, and in what ways it is new to them...".

2.2. Perceived innovativeness

A main approach has been to define perceived innovativeness by how new a product is. In one investigation, respondents rated perceived innovativeness by entering a value between 0 and 99 to reflect the product's relative newness (Hoeffler, 2003). Another

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