



Consumer innovativeness influence on really new product adoption

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ARTICLE INFO

Article history:

Available online 17 March 2012

Keywords:

Consumer innovativeness

Really new products

Diffusion of product innovation

ABSTRACT

The results of academic research into consumer innovativeness and its influence on product adoption lack consensus. To help close this gap, the study examines the relationship between consumer innate innovativeness, domain specific innovativeness, vicarious innovativeness, and the adoption of really new consumer electronic products. This study employs a quantitative survey-based approach to test several hypotheses related to consumer innovativeness and really new product adoption. In total, 256 Australians above the age of 18 completed an online survey and subsequently form the basis of the analysis. Employing structural equation modeling we find that domain specific innovativeness rather than consumer innate innovativeness is the primary influencer of the adoption of such products. We find however that the relationship between domain specific innovativeness and really new product adoption, although positive, is still quite weak. The result highlight the need for further research to more fully understand what drives or explains the adoption of “really new” products both in Australia and internationally and to further clarify relationships between innovativeness measures.

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1. Introduction

Firms believe that the continual introduction of new products is an important aspect of their business and will help attract more demand and maintain a competitive position in a market (Cooper and Kleinschmidt, 1987; Griffin and Page, 1996; Lundvall and Christensen, 2004). In order to create new markets and to alter the value dynamics in a competitive market, firms need to develop more “really new” products rather than radical or incremental products. Really new products are new products that result in a market discontinuity or a technological discontinuity but do not require customers to undergo significant training in order to use them and extract their value. Really new products provide an increased opportunity for a stronger competitive position relative to more incremental innovations.

Regardless of the importance attached to new products Gourville (2006) reports that the new product failure rate remains high, between 40% and 90%. Empirical research suggests one issue that still remains important in understanding the success of new products is the adoption and diffusion of product innovations, and the factors which influence adoption (Hauser et al., 2006). Hauser et al. (2006) suggest that the role of consumer innovativeness is

one of the key directions for innovation adoption research despite it having been examined extensively over the years and having had a range of scales developed to measure it (Goldsmith and Hofacker, 1991; Kirton, 1976; Raju, 1980).

Various forms of consumer innovativeness are said to exist including consumer innate innovativeness (CII) (Midgley and Dowling, 1978), domain specific innovativeness (DSI) (Goldsmith and Hofacker, 1991) and vicarious innovativeness (VI) (Hirschman, 1980). Nevertheless, in the study of the measurement of consumer innovativeness, Roehrich (2004) and Hauser et al. (2006) note that the results of different consumer innovativeness scales indicate a lack of consensus, and the strength of the relationship between measures of consumer innovativeness and product adoption behavior have been mixed. Prior research suggests that the relationship between consumer innate innovativeness, in particular, and new product adoption is positive but weak (Goldsmith et al., 1995; Im et al., 2003, 2007). As a result, it is argued that domain specific innovativeness and vicarious innovativeness may play an effective mediating role between consumer innate innovativeness and the adoption of really new products (Im et al., 2007). To date no academic research to date actually considers consumer innate innovativeness, domain specific innovativeness and vicarious innovativeness together. This research aims to provide much needed evidence and insight by examining the relationship between these measures of consumer innovativeness and their association with the adoption of “really new” consumer electronic products in Australia.

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2. Theoretical background

2.1. Classification of product innovation

Many of the empirical studies categorize product innovations by regarding the level of technological changes in the products and the degree of newness to the market and consumers (Reid and De Brentani, 2004). In general, studies often use radical and incremental product innovations as a dichotomous classification for identifying the types of product innovations. Garcia and Calantone (2002) argue that the dichotomous classification of product innovation is too simplistic. The authors suggest a third category – really new products which include both market breakthroughs and technology breakthroughs to either customers or companies (Garcia and Calantone, 2002).

2.1.1. Really new products

Because of a lack of consensus on definitions of various types of product innovations in the literature, researchers often misclassify the terms of radical product innovations and really new products. In order to solve the problem of misclassification of new products, Garcia and Calantone (2002) propose more specific definitions of different types of product innovations whereby “Radical innovations are innovations that cause marketing and technological discontinuities on both a macro and micro level. Incremental innovations occur only at a micro level and cause either a market or technological discontinuity but not both. Really new innovations cover the combinations in between these two extremes”. (Garcia and Calantone, 2002, p. 120). Further, Garcia and Calantone (2002) suggest that radical product innovations are rare in the market. On the other hand, really new products, which they suggest represent 50% of all new products in the market, have had relatively little attention in the literature and warrant further investigation.

2.1.2. High failure rate of new products

Many investigations of the success factors associated with new product development have been undertaken and provide frameworks for managerial implementation (Cooper, 1982; Cooper and Kleinschmidt, 1995; Ernst, 2002; Lundvall and Christensen, 2004). However, not all well-developed products succeed in the market with success rates over the past 25 years variously stated between 40% and 90% (Gourville, 2006). Even the world’s most admired companies are reporting that their products do not achieve the desired financial targets with failure rate of as much as 50% or more (Schnurr, 2005). The problem may be as much to do with the process of diffusion, consumer acceptance, and uptake of new products as the actual development of new products (Hultink et al., 2000). This study concentrates on consumer innovativeness factors affecting the adoption of really new products.

2.2. Role of consumer innovativeness

Previous research suggests that consumer innovativeness significantly influences consumer acceptance and adoption of new products (Im et al., 2003, 2007; Roehrich, 2004; Rogers, 2003). However, the definition and measurement of consumer innovativeness lacks consensus (Hauser et al., 2006; Roehrich, 2004). Various scales are available for measuring consumer innovativeness (Goldsmith and Hofacker, 1991; Kirton, 1976; Raju, 1980; Roehrich, 2004) and these are often classified into three categories, namely, life innovativeness scales, consumer innovativeness scales, and domain specific innovativeness scale (Roehrich et al., 2003). This study focuses on three different types of consumer innovativeness occurring in empirical studies namely consumer innate innovativeness, domain specific innovativeness, and vicarious innovativeness.

2.2.1. Consumer innate innovativeness (CII)

Several prior studies consider consumer innovativeness as a generalized personality trait and researchers define it as consumer innate innovativeness (Clark and Goldsmith, 2006; Im et al., 2003; Midgley and Dowling, 1993). Midgley and Dowling (1978) consider consumer innate innovativeness as an innovative predisposition related to the degree to which the individual adopts a new product without the influences of others’ previous purchasing experience.

Empirical research suggests that consumer innate innovativeness can help identify innovators and has a significant impact on the adoption of a product innovation (Citrin et al., 2000; Im et al., 2003; Lassar et al., 2005; Rogers, 2003). Nonetheless, the relationship between consumer innate innovativeness and the adoption of product innovations in academic research is inconsistent (Im et al., 2007) and lacks consensus (Hauser et al., 2006; Roehrich, 2004). This observation suggests that consumer innate innovativeness may need further examination as to its actual influence on really new product adoption.

2.2.2. Domain specific innovativeness (DSI)

Apart from the more generalized construct of consumer innate innovativeness, it is necessary for the current study to investigate other types of consumer innovativeness such as domain specific innovativeness and vicarious innovativeness (Goldsmith et al., 1995; Im et al., 2007; Roehrich et al., 2003). Prior research suggests that considering consumer innovativeness to be general across domains can be problematic (Goldsmith and Hofacker, 1991; Handa and Gupta, 2009; Klink and Athaide, 2010). Goldsmith and Hofacker (1991) suggest domain specific innovativeness as another approach to measuring consumer innovativeness and define it as “the tendency to learn about and adopt product innovations (new products) within a specific domain of interest” (p. 210). A number of prior studies using domain specific innovativeness extend to a variety of products and have attempted to illustrate its usefulness for consumer research (Flynn and Goldsmith, 1993; Goldsmith et al., 1998; Handa and Gupta, 2009; Xie, 2008). Empirical research on DSI internationally including studies in the USA, Germany and France found DSI to be the most useful scale to measure consumer innovativeness in a specific product category (Chakrabarti and Baisya, 2009; Handa and Gupta, 2009; Hynes and Lo, 2006; Klink and Athaide, 2010).

2.2.3. Vicarious innovativeness (VI)

Hirschman (1980) terms the communication process of new product information through mass media (advertising) and word of mouth as vicarious innovativeness, and suggests that “through vicarious innovativeness the individual can, in essence, adopt the product concept without adopting the product itself” (p. 285). Other than advertising and word of mouth, Im et al. (2007) consider modeling as the third component of vicarious innovativeness. Even though few researchers have used vicarious innovativeness specifically, research does exist showing that word of mouth (Mahajan et al., 1984; Verleye and Marez, 2005) and mass media communication (Lee et al., 2002; Prins and Verhoef, 2007) do play an important role on influencing new product adoption. Im et al. (2007) further suggest that vicarious innovativeness has a certain degree of impact on new product adoption.

2.2.4. Relationships between CII, DSI and VI

Prior studies suggest that consumer innate innovativeness has at best a weak association with new product adoption (Citrin et al., 2000; Im et al., 2007), whilst domain specific innovativeness is shown to hold a more important role in the relationship between consumer innate innovativeness and new product adoption. Goldsmith et al. (1995) for example found that DSI mediates the relationship between CII and new product adoption whilst Roehrich

(2004) considers DSI as “intermediary” between a more innate level of innovativeness in consumers and their adoption of new products. In their examination of vicarious innovativeness, Im et al. (2007) find that it has a role in mediating the relationship between CII and new product adoption but do not incorporate domain specific innovativeness to examine consumer innovativeness in a more comprehensive manner.

2.3. Really new product adoption

New product adoption remains an important issue among academicians and practitioners who devote considerable research to develop better understanding of this issue (Huh and Kim, 2008). Further, various empirical studies indicate the usefulness of new product adoption in measuring consumer innovativeness, and suggest that new product adoption does capture the consumer innovativeness elements (Fell et al., 2003; Im et al., 2003, 2007; Rogers, 2003; Tellis et al., 2005).

The adoption of new products is often measured in two main ways; level of ownership and relative time of adoption. Level of ownership is often measured in the literature through recording the new products owned by sampled consumers from a set of recent introductions (Midgley and Dowling, 1978). In terms of relative time of adoption, it is measured “by the length of time required for a certain percentage of the members of a system to adopt an innovation” (Rogers and Shoemaker, 1971, p. 28). Im et al. (2007) suggest that applying a square root transformation lessens the effect of outliers and enables better delineation of consumers who adopt earlier and those who own the same number of products but are later adopters.

Both Im et al. (2007) and Tellis et al. (2005) recommend that both measures of adoption are incorporated into a study, hence this research measures the adoption of really new products by using firstly, cross-sectional method which considers the number of really new electronic products owned/adopted at the time of the survey, and secondly, relative time of adoption which considers the number of years or months since adoption.

2.4. Research objectives and hypotheses

Consumer innovativeness has a certain degree of influence on really new product adoption but questions remain as to the level of influence. Thus this research addresses two research objectives. Firstly to develop a theoretically derived conceptual framework as outlined in Fig. 1 to investigate the role of consumer innate innovativeness, domain specific innovativeness, and vicarious innovativeness in influencing the adoption of really new products in Australia. Secondly, the research seeks to examine the mediating effect of domain specific innovativeness and vicarious innovativeness on the relationship between consumer innate innovativeness and really new product adoption.

Empirical researchers suggest that consumer innate innovativeness has a positive relationship with the adoption of product innovations (Im et al., 2003; Lassar et al., 2005). Thus:

H1. Consumer innate innovativeness has a positive and direct influence on (a) really new product adoption, and (b) relative time of adoption.

Prior studies suggest that consumer innovativeness varies across product categories (Citrin et al., 2000; Labay and Kinnear, 1981; Gatignon and Robertson, 1985; Goldsmith et al., 1998; Hynes and Lo, 2006). The study considers that domain specific innovativeness should also be considered in the relationship between consumer innovativeness and the adoption of new products. Thus:

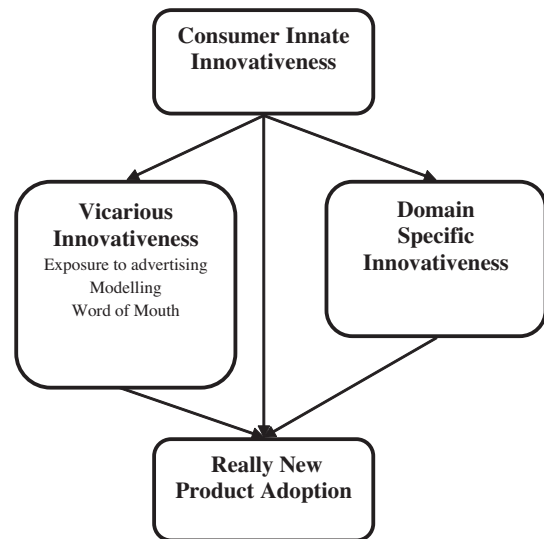


Fig. 1. Conceptual framework.

H2. Domain specific innovativeness has a positive and direct influence on (a) really new product adoption, and (b) relative time of adoption.

Im et al. (2007) suggest that vicarious innovativeness, which includes Advertising, Modeling and Word of Mouth, has a significant relationship with new product adoption. Empirical studies support that these communication factors have a great impact on consumers' purchasing decision making (Bass, 1969; Rogers, 2003). Thus:

H3. Advertising has a positive and direct influence on (a) really new product adoption, and (b) relative time of adoption.

H4. Modeling has a positive and direct influence on (a) really new product adoption, and (b) relative time of adoption.

H5. Word of Mouth has a positive and direct influence on (a) really new product adoption, and (b) relative time of adoption.

Prior studies also suggest that consumer innate innovativeness only influences new product adoption indirectly through domain specific innovativeness and/or vicarious innovativeness (Im et al., 2007; Roehrich et al., 2003).

H6. Domain specific innovativeness mediates the relationship between consumer innate innovativeness and (a) really new product adoption, and (b) relative time of adoption.

H7. Advertising mediates the relationship between consumer innate innovativeness and (a) really new product adoption, and (b) relative time of adoption.

H8. Modeling mediates the relationship between consumer innate innovativeness and (a) really new product adoption, and (b) relative time of adoption.

H9. Word of Mouth mediates the relationship between consumer innate innovativeness and (a) really new product adoption, and (b) relative time of adoption.

3. Method

3.1. Research design

The study is a cross sectional analysis of Australian consumers and focuses on the purchasers of consumer electronic as the unit

of analysis. The study follows a descriptive research design and makes use of an online questionnaire to collect data. The online questionnaire comprised of existing and modified measurement items designed to obtain information about consumer innovativeness and the relationship with really new product adoption. The survey utilizes seven-point Likert-type scales to measure the key variables.

3.2. Participants and procedure

The rationale for a focus on purchasers of consumer electronic products is that consumers who may have a predilection for these products are exposed to a number of new product releases and upgrades each year, e.g. Apple iPod/iPad and Nintendo Wii and innovativeness traits are likely to show in their purchase behavior. The participants in the study were recruited from consumers who voluntarily joined a research database of a qualified Australian market research agency contracted to undertake the fieldwork component of the study. The only limitation placed recruitment of participants was that they needed to be over 18 years of age and were permanent Australian residents. Prior to general administration of the survey, the researchers undertook a pilot study on a convenience sample of university students in Australia ($n = 265$). As a result of the study minor modifications to final questionnaire and wording of some items was undertaken.

Of the 265 final respondents, 51% are males and 71% are in the age of 26–55. Forty-one percent are working full time, 23% are working part time and 35% are not currently working in paid employment (e.g., student, home maker or retired). Thirty percent of the respondents earn less than \$2000 per month, 22% earn between \$2000 and \$4000, 20% earn between \$4000 and \$6000, 10% earn between \$6000 and \$8000, and 16% earn more than \$8000. Forty-four percent have secondary school as their highest academic qualification, 23% have a higher education diploma, 16% have a bachelor degree, and 14% have master degree. Sixty percent of respondents are married. Thirty percent have no children, 11% have one child, 32% have two children, 17% have three children, and 9% have more than four children.

3.3. Measures

The *Hurt–Joseph–Cook* (1977) scale was employed to measure consumer innate innovativeness (CII). This scale has been used widely in studies of consumer innovativeness (Clark and Goldsmith, 2006; Goldsmith et al., 1995; Pallister and Foxall, 1998). Originally, Hurt et al. (1977) report a 20-item scale with a reliability of .94. Subsequently, Hurt et al. (1977) and Pallister and Foxall (1998) both propose a shortened version of the scale which demonstrates high and acceptable levels of reliability and discriminant validity for measuring consumer innate innovativeness (Goldsmith et al., 1995; Pallister and Foxall, 1998). This study adopts an 11-item *Hurt–Joseph–Cook* (1977) scale. In coding, high scores indicate a high level of consumer innate innovativeness.

Prior research suggests that consumer innovativeness varies across product categories or domains (Goldsmith and Hofacker, 1991; Roehrich et al., 2003). In order to measure domain specific innovativeness, the study employs an adapted six-item scale developed originally by Goldsmith and Hofacker (1991). Previous research has proved the scale to be unidimensional, highly reliable, and valid in measuring innovativeness in a specific product category (Chakrabarti and Baisya, 2009; Hoffmann and Soye, 2009; Klink and Athaide, 2010).

In measuring vicarious innovativeness, the current study draws on Im et al. (2007) and measures three factors – exposure to advertising, modeling, and word of mouth. The study measures exposure to advertising by asking the respondents to report whether they

saw the selected really new products in the mass media prior to purchase. Modeling is measured by asking the respondents to report whether they saw friends or colleagues in their social networks owning and using the selected really new products prior to their adoption. The study measures word of mouth by asking the respondents to report whether they had personal conversations about the selected really new products with another individual prior to their adoption.

This study uses two methods for measuring really new product adoption behavior; the cross-sectional/ownership measure and the relative time of adoption (RTA) measure. The cross-sectional/ownership approach to measurement relates to the number of products owned from selected consumer electronics products which are considered as really new at the time of the study. Prior studies suggest this method to be a practical measure of new product adoption behavior with less recall bias (Midgley and Dowling, 1978). The current study selected 20 electronic products which were new at the time of data collection. They are compact digital camera, digital SLR camera, 3G mobile phone, multimedia smartphone, PDA, digital media player, digital hard drive camcorder, Blu-ray video player, home media center, LCD or Plasma TV, Internet TV, Super compact subnotebook, digital photo frame, console video game player, vehicle satellite navigator, digital radio, internet phone, digital portable photo printer, eBook reader, digital pen.

The study also uses RTA to measure really new product adoption behavior. Empirical studies suggest that innovators with a high level of consumer innovativeness adopt a new product relatively earlier than other members in their social system (Mahajan et al., 1984; Rogers, 2003). In the study, respondents are asked to report number of years or months since their adoption of a really new product. By following the approach of Im et al. (2007), the study calculates RTA as average of the length of ownership of really new products:

Relative Time of Adoption for Really New Products

$$= \sum (\text{productOwned}_{0-1}) \times \sqrt{\text{MonthsOwned}}$$

Even though some empirical studies criticize RTA as susceptible to recall biases (Midgley and Dowling, 1978), prior studies suggest that it helps assess the convergent validity with cross-sectional method discussed in earlier section (Midgley and Dowling, 1978; Im et al., 2007).

4. Analysis and results

4.1. Reliability and validity

All scales were subject to exploratory and confirmatory factor analysis. Exploratory factor analysis suggested that CII, VI, and DSI did not have a unidimensional structure, thus, new factors were created and subjected to confirmatory factor analysis. This study used AMOSv16 to evaluate the final measurement model. The reliability of the various factors ranged from .71 to .89, indicating acceptable internal consistency (Table 1). The study assessed convergent validity by computing average variance extracted (AVE) score, and the results showed that the AVE were all greater than the .50, indicating acceptable convergent validity.

Discriminant validity was assessed by comparing the minimum variance extracted for each pair of constructs with the square of the correlation between them. In most cases, the square of the correlations are less than the AVE score. However, there was an exception; the AVE score of WOM (.73) was only .01 less than the square of the correlation between Modeling and WOM (.74). All constructs were found to achieve acceptable reliability and demonstrate content and convergent validity.

4.2. The integrated model

To date no study considers consumer innate innovativeness, vicarious innovativeness and domain specific innovativeness simultaneously. Structural equation modeling is employed to test an integrated model assessing how these innovativeness types influence new product adoption. Structural equation modeling is employed because it is capable of examining the interrelationships among observed and unobserved variables at the same time, and it also has the ability to calculate direct, indirect and total effects between predictors, mediators and dependent variables. Two mediators are employed and the analysis is run for each mediator one at a time within the model. The study measures indirect effects by using the product of coefficients test which tests the significance of the mediating effect by dividing the estimate of the indirect effect by its standard error. The standard error for the indirect effects is estimated by setting the bootstrap at 200 and a confidence level of 95%. It is worth noting that the emphasis of the study is on the relationships between key constructs rather than the measurement model per se.

Table 2 presents the beta coefficients from the relationships between the antecedent variables and really new product adoption, along with the *t*-value and respective levels of significance. The results of the Integrated Model do not support H1a and H1b. The results indicate no significant direct relationship between consumer innate innovativeness and really new product adoption. In contrast, the results support H2a ($\beta = .22$, $t = 1.98$, $p < .05$) and H2b ($\beta = .20$, $t = 1.82$, $p < .05$). For the study, only, domain specific innovativeness appears to have a significant association with really new product adoption.

In terms of vicarious innovativeness, the results do not support H3a–H5b. There is no direct effect on really new product adoption. The results suggest that domain specific innovativeness is a better predictor of really new product than consumer innate innovativeness and vicarious innovativeness. In terms of mediating effects, the results support H6a ($\beta = .20$; $t = 1.76$, $p < .05$) and H6b ($\beta = .16$; $t = 1.86$, $p < .05$). The mediating effect calculation suggests that domain specific innovativeness mediates the relationship between consumer innate innovativeness and really new product adoption.

4.3. General discussion

The results from the integrated model provide the evidence of a lack of direct association between consumer innate innovativeness, a generalized predisposition, and really new product adoption. The results confirm previous findings that consumer innate innovativeness does not directly or only weakly influences innovation adoption behavior (Citrin et al., 2000; Goldsmith et al., 1995; Im et al., 2007). This result provides support for using constructs other than

Table 1

Internal consistency, square roots of average variance extracted and correlation matrix.

Construct	Internal Consistency	Validity		
Consumer innate innovativeness		1	2	3
1. Accepting of new ideas	.81	.65		
2. Suspiciousness of new ideas	.81	.62	.83	
3. Challenge of new ideas	.82	.10	.10	.84
Domain specific innovativeness		1	2	
1. Speed of purchase	.85	.81		
2. New product information	.71	.25	.74	
Vicarious innovativeness		1	2	3
1. Modeling	.89	.82		
2. Advertising	.81	.48	.76	
3. Word of Mouth	.76	.74	.45	.73

Table 2

Direct and mediating effect of the integrated model.

Hypotheses	Ownership and RTA Regression coefficient (<i>t</i> -value)
<i>Consumer innate innovativeness</i>	
H1a: CII → Ownership	-.08 (-.66)
H1b: CII → RTA	-.05 (-.43)
<i>Domain specific innovativeness</i>	
H2a: DSI → Ownership	.22* (1.98)
H2b: DSI → RTA	.20* (1.82)
<i>Vicarious innovativeness</i>	
H3a: Advertising → Ownership	-.00 (-.01)
H4a: Modeling → Ownership	-.02 (-.09)
H5a: WOM → Ownership	.16 (.82)
H3b: Advertising → RTA	-.11 (-1.56)
H4b: Modeling → RTA	-.03 (-.18)
H5b: WOM → RTA	.18 (.93)
Hypotheses	Mediating effect Regression coefficient (<i>t</i> -value)
<i>Ownership</i>	
H6a: CII → DSI → Ownership	.20* (1.76)
H7a: CII → Advertising → Ownership	-.00 (-.10)
H8a: CII → Modeling → Ownership	-.04 (-1.57)
H9a: CII → WOM → Ownership	-.02 (-1.10)
<i>Relative time of adoption</i>	
H6b: CII → DSI → RTA	.16 (1.46)
H7b: CII → Advertising → RTA	-.00 (-.07)
H8b: CII → Modeling → RTA	-.04 (-1.00)
H9b: CII → WOM → RTA	-.01 (-.53)

* $p < .05$.

** $p < .01$.

*** $p < .001$.

a generalized predisposition to be innovative when assessing new product adoption behavior.

Importantly, the analysis finds a positive and significant relationship between domain specific innovativeness and really new product adoption. This suggests that consumers who have a high level of domain specific innovativeness and a stronger connection to certain product categories tend to own more really new products and adopt earlier than others. This finding also supports previous studies (Citrin et al., 2000; Goldsmith and Hofacker, 1991) and suggests that researchers need to be focused on product domains or categories when asking consumers about their product purchasing and product adoption behaviors.

Surprisingly there is no statistical relationship between vicarious innovativeness and really new product adoption. This suggests that unlike the findings of Im et al. (2007) we find that communication factors have no direct influence on the really new product adoption behavior of this sample of consumers. The results are not consistent with the findings of Im et al. (2007). The reason could be that Australians may consider ownership of really new products as a private thing, and thus make their own decisions independently from others. Further, Australian consumers might tend to believe the new products they actually see rather than rely on personal and impersonal communication. This may become more evident with further research into the nature, role and measurement of vicarious innovativeness and its influence on new product adoption.

Finally, the results of mediation analysis confirm Roehrich's (2004) assertion that only domain specific innovativeness has a mediating effect on the relationship between consumer innate innovativeness and really new product adoption.

4.4. Conclusion and implications

In the previous discussion, the definition and measurement of consumer innovativeness indicates a lack of consensus in empirical

studies. The first contribution of this study is that increased support is found the poor performance of consumer innate innovativeness as a measure or predictor of consumer adoption behavior for really new electronic products. Consequently, researchers should further investigate the personality-related antecedents of new product adoption to determine if there is a better measure for behavior prediction. A further contribution of this study is that no research considers CII, DSI, and VI together, and the mediating roles of DSI and VI have not been fully tested in the literature. As mediating variables, the results suggest that DSI has an impact on the relationship between CII and really new product adoption. Vicarious innovativeness, on the other hand, may have a moderating rather than mediating effect, and needs further investigation. Further, the study adds support for scales drawn from previous research, and responds calls by Roehrich (2004) and others for more empirical international validation of the growing body of theoretical work related to consumer innovativeness and its association with product adoption behavior.

Managerially, marketers and market researchers need to recognize that there is no single measure that captures the propensity of consumers to adopt new products. If consumer innovativeness items and scales are used in their analysis of product adoption then they may be better served by those that are related to domain specific behaviors rather than generalized personality traits. Measuring new product adoption behavior using only consumer innate innovativeness or vicarious innovativeness in Australia will be problematic.

4.4.1. Limitations and future research

The study has several limitations. First, the study collects cross-sectional data from respondents a single large city in Australia. Respondents who live in large cities may have greater opportunity to obtain really new products and be exposed to information about such products, and thus have different perspectives from people who live in other small cities or towns. Second, the use of online questionnaires can reduce human mistakes at the data entry stage but can suffer from issues associated with appropriate completion because of the lack of human presence for clarification purposes. Third, the category of really new products which the study investigates may limit the findings. Consumer electronic products, for example, are only one of many different product categories or domains that may have been employed as a focus for assessing adoption behaviors. Thus, the results of the study within this particular product category may only provide a general overview in the adoption of consumer electronic products. Further research should examine other product categories and/or really new services to expand the scope of this research field. Finally, the study does not demonstrate a consistent result for the measurements of consumer innovativeness and highlights the issue of a lack of consensus over which measures to use and their usefulness and further research needs to be carried out to more fully assess what exactly drives adoption.

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