Consumer Characteristics and Decision States: A Study of New Product Purchase Intention

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Abstract

While a number of studies have examined the measurement of certain consumer innovation characteristics during the purchase of a high-involvement product, the importance of these constructs can vary depending on the decision state of the consumers in relation to the particular product. This paper presents preliminary results of an online survey of 1495 people as they consider the purchase of a DVD recorder. We test the validity of six consumer characteristic constructs and other socio-demographic variables and compare how these consumer characteristics influence four decision states (Unaware; Aware but not in the market; Aware and in the market; and Already purchased). The results indicate that there are significant relationships between particular consumer characteristics and the decision states.

Introduction

It has been generally accepted that consumers progress through a series of decision states associated with the purchase of "high-involvement" products (Urban, Hauser, & Roberts 1990; Urban, Hulland, & Weinberg 1993; Oppewal *et al.* 2004), that begins with unawareness and eventually results in the decision to (or not) purchase the product. The idea of a hierarchical system of decision states in not new (eg, Nicosia, 1966; Howard and Sheth, 1969; Engel, Blackwell and Kollat, 1978; Louviere, 1981), and a number of studies have focussed on particular states like awareness vs non-awareness or consideration vs non-consideration (Roberts and Lattin, 1991, 1997), or choice of brand (eg, Louviere, Hensher and Swait, 2000) and several studies have modelled multi-stage choice processes, in particular the role of consideration (e.g. Bronnenberg and Vanhonacker, 1996; Gensch, 1987; Swait and Ben-Akiva, 1987). Such studies are important for the understanding of potential consumers' behaviour in relation to the purchase of a new product and can complement innovation diffusion approaches such as by Rogers (1995). Knowledge about how consumers progress through these stages can assist marketers in their decisions which market segments to target with what messages.

This paper analyses a number of consumer characteristics (both attitudinal and demographic) to determine their influence on decision states in the purchase of a DVD recorder. In particular it will test six multi-item scales to measure consumer innovation characteristics: (1) Consumer Novelty Seeking; (2) Consumer Independent Judgment Making; (3) Social Innovativeness; (4) Dispositional Innovativeness; (5) Consumer Susceptibility to Normative Influence; and (6) Technology Expertise. While previous studies have analysed innovation characteristics in relation to purchasing a new product, it is important to replicate and test consumer characteristics scales to ensure their validity in different purchase situations. Also it

should be noted that Technology Expertise is a new scale. Using data collected from a nation-wide on-line panel, the responses were analysed using exploratory factor analysis and reliability analysis for each multi-item measure, and then confirmatory factor analysis. The overall objectives were: (1) to test the validity of the six consumer characteristic constructs, and (2) to identify any significant relationships between particular attitudinal and socio-demographic variables and the decision states in order to provide a better understanding of consumer choice.

Consumer Characteristics

Consumer Attitudinal Constructs

The six consumer attitudinal constructs tested in this study were developed using multi-item scales, and were chosen as they represent different aspects of innovation identified in previous studies, except for Technology Expertise, which is a new scale developed for this study. These will be discussed below:

Consumer Novelty Seeking (CNS) relates to "the desire to seek out new product information" (Manning, Bearden, and Madden 1995). Hirschman (1980) observed CNS and linked it to the desire to seek out new product information. If a consumer has high novelty seeking motive, then they would be more likely to want to purchase a new product. The items used to measure CNS were taken from Manning *et al.* (1995) and included "I often seek out information about new products and brands" and "I am continually seeking new product experiences".
Consumer Independent Judgment Making (CIJM) measures the degree to which "an individual makes new product purchase decisions independently of the communicated experience of others" (Manning, Bearden, and Madden 1995). It is felt that those who are early purchasers of new products do so without seeking information or assistance from others (Midgley and Dowling 1978). Six items were used to measure CIJM that were developed by Manning, Bearden, and Madden (1995). The scale items included "I seldom ask a friend about his or her experiences with a new product before I buy the new product" and "I decide to buy new products and services without relying on the opinions of friends who have already tried them".
Social Innovativeness: measures consumers' need for uniqueness. The nature of innovativeness and its role in early adoption of new products has been on interest of a number of studies (Hirschman 1980; Manning, Bearden, and Madden 1995; Rogers 1995; Roehrich 2004). The items used to measure Social Innovativeness come from Steenkamp and Gielens (2003) and Roehrich (2004). The scale items included "I am usually among the first to try new products" and "I try new products before my friends and neighbours".
Dispositional Innovativeness: refers to consumer predisposition to purchase new products rather than to remain with previous consumption patterns. Steenkamp and Gielens (2003) view dispositional innovativeness as a consumer trait that positively affects the trial probability of new products. The items used to measure Dispositional Innovativeness was developed from Steenkamp and Gielens (2003) and (Roehrich 2004). The scale items included "If I like a brand, I rarely switch from it just to try something new" and "I am very cautious in trying new and different products".
Consumer Susceptibility to Normative Influence: refers to a consumer's tendency to conform to the expectations of other people (Bearden, Netemeyer, and Teel 1989). Consumers with

high susceptibility to normative influence are unlikely to make an adoption decision until it is clear that a majority of relevant others supports the new innovation. The scale items included "It is important that others like the products and brands I buy" and "I rarely purchase the latest fashion styles until I am sure my friends approve of them".
Technology Expertise: measures consumers' perceived expertise in electronic goods. It is assumed that if consumers perceive themselves as experts in new technology, they are more likely to be an early adopter. This new scale was developed after pretesting of the survey instrument. The scale items included "I am quite an expert when it comes to DVD technology" and "Other people often ask my advice about electronic products".

Socio-Demographic Variables

As well as the six multi-item consumer attitudinal constructs presented above, a number of socio-demographic variables were also used in this study to determine their effects on the decision states. These single- and multi-item measures aimed to gain a broader profile of the consumers and study how decision states link to related constructs, including awareness, knowledge, brand consideration, and purchase (Louviere, Waller and Smith 2003; Morrison et al 2005). The items tested were: new product (DVD) knowledge (multi-item formative measure); awareness of DVD brands; purchase DVD brands; considered DVD brands; ownership of DVD player (not stand-alone); number of movie DVD discs in the household; number of PCs in the household; age of the newest PC in the household; age of the TV set in the household; usage of DVD equipment, and gender.

Four Decision States

"Decision states" are discrete behavioural states that correspond with particular levels of knowledge, information search, product evaluation, and readiness/intention to make a purchase. Consumers can move from one state to another as a result of changes in their level of awareness, search for information, marketers' promotional activities, and purchase preferences. Urban, Hauser, & Roberts (1990) and Urban, Hulland, & Weinberg (1993), in particular, discussed decision states as reflecting the level of information that a consumer has encountered or obtained. For this study the four basic decision states are: 1. Unaware; 2. Aware but not actively considering; 3. Aware and actively considering ("in the market") and 4. Made purchase decision. This is based on Oppewal *et al.* (2004).

Methodology

The data were obtained from a random sample of panel members of a nation-wide on-line panel in Australia. A total of 1495 people completed the survey, with a response rate of 36.1%. The on-line survey comprised questions measuring decision states, questions measuring DVD recorder purchase intentions across a number of brands, and a battery of attitudinal scales and demographic questions. The sample consisted of 52.5 % males (and 47.5% females) and 42.7% were under 35, 46.5% between 35 and 55, and 10.8% were over 55 years old, which could reflect issues relating to the use of an on-line survey, but as the results were compared using a number of categories, it is believed that the sample can provide implications to marketers. Each decision state was measured with multiple items. States 1 (unaware) and 4 (have purchased) were measured with direct dichotomous (yes/no)

questions such as "*I have never heard of DVD recorders*" (unaware) and "*I have purchased a DVD recorder*" (purchased). The other two states were measured with questions concerning consideration and search behaviours that would be expected of people who were currently searching for a DVD recorder. Responses were measured on a 5-point rating scale (1 = does not describe me at all; 5 = describes me very well). Respondents were then categorised as either being "in the market" or "not in the market" based on their mean response to these questions. This process resulted in the decision states being: Unaware – 4.0%; Aware but not in the market – 71.0%; Aware and in the market – 20.1%; and Already purchased – 4.8%.

Results

After the data was collected, a number of statistical procedures were used to assess the psychometric properties of the measures. They included exploratory factor analysis, reliability analysis and confirmatory factor analysis for each of the six multi-item measures. The Cronbach alphas for the scales were: Consumer Novelty Seeking (0.898), Consumer Independent Judgment Making (0.880), Social Innovativeness (0.856), Dispositional Innovativeness (0.665), Consumer Susceptibility to Normative Influence (0.841), and Technology Expertise (0.742), thus indicating satisfactory reliability for all measures. Both exploratory and confirmatory factor analysis results showed that there existed the six factors, as expected. The six measures exhibited very good discriminant validity. All except for Dispositional Innovativeness possessed very good convergent validity, based on the criteria of average variance explained greater than 5. However, the t-tests for the factor loadings of Dispositional Innovativeness are still highly significant ($p<0.01$). Some of the selected model fit statistics are as follows: Chi-square = 2656.425, df = 390, p = 0.000; GFI = 0.880, AGFI = 0.857, CFI = 0.895, TLI = 0.883, RMSEA = 0.064. These figures indicate a reasonably good overall model fit. The results overall confirm the validity of the scales. This answers objective 1.

The second objective of this paper was to examine the effects of various consumer characteristics, including attitudinal and socio-demographic variables, on decision states in the purchase of a new product (DVD recorders). Having assessed the measurement properties of the six measures, we now proceed to the examination of the structural relationship between the consumer characteristics and the four decision states. Table 1 presents results of significant ANOVAs with three orthogonal contrasts. Each contrast represents different tests of the decision states. Contrast 1 (C1) compares the first two decision states (unaware and aware but not in the market) with the last two decision states (in the market and already purchased). Contrast 2 (C2) compares the decision state 3 (in the market) with decision state 4 (already purchased). Contrast 3 (C3) compares the decision state 1 (unaware) with decision state 2 (aware but not in the market).

In column C1 of Table 1, the t-test results show that those in the market or already purchased a DVD recorder were found to be significantly more novelty seeking, more socially innovative, more of a perceived expert in technology, performed better in the DVD knowledge test, are more aware of DVD brands in the market, would consider purchasing from a broader range of DVD brands, owned more DVD players, possessed more DVD movie discs, have newer PC and TV sets, used DVD equipment more frequently, and were primarily males.

In column C2, the t-test results show that those in the market, relative to those who had already purchased a DVD recorder, were found to be significantly less susceptible to normative influence, performed better in the DVD knowledge test, had a stronger intention to purchase various DVD brands, and owned more DVD players.

In column C3, the t-test results show that those unaware of DVD recorders, relative to those aware but not in the market, were found to be significantly less novelty seeking, more independent in consumer judgment making, more subject to normative influence (waiting for peer approval), performed poorly in the DVD knowledge test, had less intention to purchase from a range of DVD brands offered, owned less DVD players, and were less likely to be male. These results answer objective 2.

Conclusion

In this paper preliminary results of an on-line survey of 1495 people were presented to test the validity of six consumer characteristic constructs and to identify any significant relationships between particular attitudinal and socio-demographic variables and the decision states. The measurement properties of 6 multi-item attitudinal scales relating to new product adoption were assessed and they were found to be reliable. The effects of these attitudinal scales and selected socio-demographic variables on decision states were examined and the test results were largely consistent with consumer behaviour theories in regards to consumer decision states (Nicosia 1966; Howard and Sheth 1969). Using attitudinal and socio-demographic measures, this study provides the first empirical test of the conceptual model relating to decision states. Future research could examine the effects of these decision states on consumer preferences, brand choices, and consistency of utility estimates (Louviere, Hensher, and Swait 2000). Such research will shed more light on the topic of decision states and contribute to the understanding of consumer decision-making for new products.

Table 1: Results of One-Way ANOVA with Orthogonal Contrasts

ID	Consumer Characteristics	ANOVA F p-value	C1 t-value	C2 t-value	C3 t-value
1	Consumer Novelty Seeking	0.000	8.123***	1.892	-2.009*
2	Consumer Independent Judgment Making	0.106	-0.343	-1.269	2.032*
3	Social Innovativeness	0.000	5.197***	0.915	0.417
4	Dispositional Innovativeness	0.231	-0.143	-0.708	-0.751
5	Susceptibility to Normative Influence	0.000	-0.859	-2.263*	2.777**
6	Technology Expertise	0.000	7.843***	1.935	-1.887
7	Index of DVD knowledge test	0.000	7.535***	2.599**	-6.506***
8	Number of awared DVD brands	0.000	5.306***	1.363	-3.861***
9	# of purchased DVD brands	0.000	3.749***	-0.590	-0.040
10	# of considered DVD brands	0.000	3.445***	2.673**	-4.589***
11	Ownership of DVD player (not stand-alone)	0.000	4.400***	2.362*	-4.634***
12	# of movie DVD discs in the household	0.000	5.667***	0.057	-0.969
13	# of PCs in the household	0.000	3.172**	-0.626	0.203
14	Age of the newest PC in the household	0.004	-2.863**	-0.252	1.170
15	Age of the TV set in the household	0.002	-3.046**	0.950	0.881
16	Usage of DVD equipment	0.000	4.447***	-0.560	0.075
17	Percentage of males	0.000	4.411***	-0.845	-2.426*

* p<0.05, ** p<0.01, *** p<0.001

References

Bearden, W.O., Netemeyer, R.G., El Teel J. 1989. Measurement of Consumer Susceptibility to Interpersonal Influence, Journal of Consumer Research, 15 (March), 473-481.

Bronnenberg, B., Vanhonacker, W.R., 1996. Limited Choice Sets, Local Price Response, and Implied Measures of Price Competition. Journal of Marketing Research 33 (May), 163-173.

Engel, J.F., Kollat, D.T., Blackwell, R.D., 1978. Consumer Behavior, 3rd. ed., The Dryden Press, Hinsdale, IL.

Gensch, D. 1987. A Two-Stage Disaggregate Attribute Choice Model. Marketing Science 6 (Summer), 223-231.

Hirschman, E.C. 1980. Innovativeness, Novelty Seeking, and Consumer change, Journal of Consumer Research, 7, 283-295.

Howard, J.A., Sheth, J.N., 1969. The Theory of Buyer Behavior, John Wiley & Sons, Inc., New York.

Louviere, J.J., 1981. A Conceptual and Analytical Framework for the Analysis of Spatial and Travel Choices. Economic Geography 57 (4), 304-315.

Louviere, J.J., Hensher, D.A., Swait, J.D., 2000. Stated Choice Methods: Analysis and Application, Cambridge University Press, Cambridge, UK.

Louviere, J.J. Waller, D.S., Smith, M., 2003. Modelling a Hierarchy of Consumer Decision States: The Choice of Island Holiday Destinations and DVD Players. In Kennedy, R. (Ed.). Proceedings of the Australia New Zealand Marketing Academy Conference. Adelaide: University of South Australia, 554-559.

Manning, K.C., Bearden, W.O. and Madden T.J. 1995. Consumer Innovativeness and the Adoption Process, Journal of Consumer Psychology, 4 (4), 329-345.

Midgley, F.F., Dowling G.R. 1978. Innovativeness: the Concept of its Measurement, Journal of Consumer Research, 4, 229-242.

Nicosia, F.M., 1966. Consumer Decision Processes, Prentice Hall, Englewood Cliffs, NJ.

Oppewal, H., Morrison, M., Rungie, C., Waller, D., Wang, P., Louviere, J., Devinney, T., 2004. A Conceptual Model of Consumer Decision States Using Information Acceleration. In Wiley, J., Thirkell, P. (Eds). Proceedings of the Australia New Zealand Marketing Academy Conference. Wellington: Victoria University of Wellington, CD Rom.

Roberts, J.H., Lattin, J.M., 1991. Development and Testing of a Model of Consideration Set Composition. Journal of Marketing Research 28 (November), 429-440.

Roberts, J.H., Lattin, J.M., 1997. Consideration: Review of Research and Prospects for Future Insights. Journal of Marketing Research 34 (August), 406-410.

Roehrich, Gilles 2004. Consumer Innovativeness: Concepts and Measurements, Journal of Business Research, 57, 671-677.

Rogers, E.M. 1995. Diffusion of Innovations. New York: The Free Press.

Steenkamp, JB.E.M., Gielens, K. 2003. Consumer and Market Drivers of the Trial Probability of New Consumer Packaged Goods, Journal of Consumer Research, 30 (December), 368-384.

Swait, J., Ben-Akiva, 1987. Incorporating Random Constraints in Discrete Choice Models of Choice Set Generation. Transportation Research, B 21 (April), 91-102.

Urban, G.L. Hauser, J.R., Roberts, J.H., 1990. Prelaunch Forecasting of New Automobiles. Management Science, 36 (4), 401-421.

Urban, G.L., Hulland, J.S., Weinberg, B.D., 1993. Premarket Forecasting for New Consumer Durable Goods: Modeling Categorization, Elimination, and Consideration Phenomena. Journal of Marketing 57 (April), 47-63.

Waller, D., Wang, P., Oppewal, H., Morrison, M., Rungie, C., Louviere, J., Devinney, T., 2004. Decision States for Purchasing a DVD Player: A Preliminary Study. In Wiley, J., Thirkell, P. (Eds). Proceedings of the Australia New Zealand Marketing Academy Conference. Wellington: Victoria University of Wellington, CD Rom.