HOW DOES VARIETY SEEKING AFFECT PRODUCT USAGE?

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ABSTRACT

An experiment was conducted to determine if consumers purchased products with many more functions than they actually used, and if so why. It was found that, in the case of calculators, the higher the variety seeking drive of the consumer, the higher his level of anticipated usage of functions in the future, and hence higher the number of functions purchased. It was also found that the actual number of functions used by a consumer relative to the total number of functions available in a product increased rapidly for a short time following purchase, and then stabilized. Further, the disconfirmation with product usage was found to decrease over the life of the product. The implications for future research have also been discussed.

INTRODUCTION

It has been observed that consumers spend significantly more time and effort as "consumers" (ie on consumption of a product after purchase), than as "buyers" (ie on pre-purchase activities). Yet, most research has been directed towards their pre-purchase and purchase activities (Belk, 1984). Post-purchase consumption phenomena, such as the extent or degree of product usage, and the search for information on newer or more efficient uses of the product, are equally important in understanding consumption behavior, but have received little attention from researchers. The study of consumption activities after purchase is of particular importance due to the proliferation of "multi-functional" products which provide consumers with a much greater variety in usage. Typical "multi-functional" products include the personal computer, the video casette recorder (VCR) and the microwave oven. By using a combination of the multiple functions available in each of these products, consumers are able to find newer uses for the product over and above their day-to-day needs.

In general, since consumers are highly involved (ie spend a large amount of time and effort) in purchasing these multi-functional products, one would expect that they use the multiple functions at least to the extent which their needs are satisfied. Yet, we often observe that once the initial charm of the new product wanes, they are less willing to spend time or effort in learning how to use the newer functions available in the product. This raises an interesting question:

Do consumers utilize most of the functions/features available in products or do they use only a small portion of those features?

This in turn raises several issues: By providing more and more sophisticated product features which consumers rarely use, are marketers wasting resources and creating social waste? Why do consumers buy sophisticated products paying more for additional features they will not need for their routine usage? What proportion of the available functions in a product do they actually use for routine task requirements? Are there significant differences between consumers who use more functions of a product and others who do not? How does a consumer's current product usage and skill levels in using the product relate to his future anticipated usage?

Product Usage And Its Determinants

A consumer's degree of product usage is dependent upon his task requirements for solving his problems. While tasks can result from their situational disposition, new tasks could be created by the consumers themselves. The degree of usage of the multi-functional products can be divided into the frequency of usage and multi-functional usage. The frequency of usage (FU) is more likely to be related to just individual task requirements. The degree of multi-functional usage or Variety of Usage (VU), on the other hand, is dependent not only on task requirements, but also on the level of operational skill of the consumer, and on the consumer's Variety Seeking need (Hirschman, 1980).

However, past researchers have consistently looked at only the frequency of usage and have neglected Variety of Usage (Zaichkowsky, 1985) when measuring product usage. Even in the context of variety seeking, product usage has been measured in this limited fashion (Price & Ridgway, 1983).

The objective of this research is to examine the link between this variety seeking drive of consumers with their consumption/usage of multi-functional products, taking into account situational differences and consumer input differences which could also affect usage.

Variety Seeking in Consumption: Broadening the Concept

Past literature has classified variety-seeking behavior into three types: (1) Exploratory Purchase Behavior (2) Vicarious Exploration and (3) Use Innovativeness (Hoyer & Ridgway, 1984; Price & Ridgway, 1983). Whereas the

first two components refer to variety seeking in purchase, use innovativeness refers to variety seeking in consumption. Most studies have focused on exploratory purchase behavior (for example, McAlister, 1982, Raju & Venkatesan, 1980), and this stream of research has examined brand-switching and innovating behavior. Vicarious exploration refers to variety-seeking by acquiring information about the product without actually purchasing it (Hirschman, 1980; Raju, 1980).

In this study, we will focus on the third construct: use innovativeness. The concept of use innovativeness was first developed by Hirschman (Hirschman, 1980). According to Hirschman, when a consumer used a previously adopted product to solve a novel consumption problem, that consumer was being use innovative. Price & Ridgway expanded the concept from a single new use of a previously adopted product to multiple new uses (Price & Ridgway, 1983). They also established use innovativeness as being distinct from exploratory purchase and vicarious exploration (Price & Ridgway, 1983).

The domain of Variety Seeking in Consumption (VSC) has unfortunately been restricted to current usage of the product in new or novel ways. Part of this problem has come about from using the term "innovativeness" (in Use Innovativeness) to denote variety seeking. Innovativeness refers to the actual act rather than just the willingness to adopt (Rogers & Shoemaker, 1971; Midgley & Dowling, 1978). Variety Seeking, on the other hand can be in the form of vicarious experience or even just a mental exploration of possible new uses of the product. Innovativeness is related to the notion of relative precedence to others in adopting a product (Rogers, 1962). However, a consumer seeking variety need not be one of the earliest to use the product in new or unusual ways. He could well observe how someone else is using the product and decide to "imitate". By using the term innovativeness, we tend to limit ourselves to newer uses of the product in the present time frame. Yet, variety seeking could also be in the form of anticipated usage, ie new ways in which the consumer expects to use the product in the future. For example, consumers who purchase a personal computer may do so not only because of the new uses of the PC they can immediately enjoy but also because of the new uses available to them in the future (such as trying new software). In this sense, a product has stored variety-seeking value for the customer for future consumption. The domain of VSC, therefore, needs to be expanded beyond past and current usage of the product (in new ways) to include anticipated usage.

Variety Seeking in Multi-functional Products

In products with fewer functions/features (generally non-durable goods), consumers are able to satisfy their variety seeking drive by switching brands and/or product classes quite easily. The replacement rate of the product is high, and risks involved in the trial of newer substitutes are low.

However, in products with multiple functions/ features (typically durables and semi-durables), consumers go through a more elaborate variety- seeking process commencing even before purchase (See Figure A). A consumer faced with several stimuli (such as multiple functions/features of the product) attempts to obtain more information about available substitutes. He makes his choice based on both his task requirements and his need for variety.

Going one step further, the consumer considers not only his present task-requirements and variety-seeking need, but also caters to his future task needs and variety needs. Thus, the pre-purchase evaluation (Stage A) is based on both current requirements and future expectations. Following the actual purchase of the product, the consumer learns the basic functions required for his routine tasks (Stage B). This learning process takes place in a very short period following the purchase, and the consumer improves his skills in using the learnt functions with task repetition. The consumer may also seek variety by learning to use newer functions any time after the purchase (Stage C), and the exact timing of this stage depends on the consumer's use innovativeness (Hoyer & Ridgway, 1984). For highly use innovative consumers, Stage C may begin simultaneously with Stage B (learning task functions); for those consumers with low use innovativeness Stage C may start much later than Stage B. In any case, after the short initial learning period, consumers seek a lower and lower proportion of total available functions to satisfy their variety seeking. This variety-seeking process discontinues when the product provides stimulation below the optimal level for the consumer, who then begins the search for a more viable product substitute (Stage D).

The foregoing discussion of VSC leads to the following hypotheses regarding multi-functional products.

Hypothesis 1

The higher the use innovativeness of a consumer, the more likely he is to:
(a) purchase a product with higher number of functions;
(b) have a higher percentage of in-use functions (current usage);
(c) have an operating knowledge of a higher percentage of functions;
(d) anticipate using a higher percentage of functions in the future (anticipated usage);
(e) find more new uses for the product.

Hypothesis 2

The actual number of functions used by a consumer relative to the total number functions available in a product, increases rapidly for a short time period following purchase after which it increases very slowly and stabilizes.

We already observed that, in the case of a multi-functional product , the consumer learns most uses of the product in a short initial period following the purchase. A consumer's expectations about product usage (number of functions used) also vary with time. Due to the rapid learning process in the early stages, the consumer expects to learn at the same pace and use a very high number of functions over time. However, the rate of learning declines and does not keep pace with consumer expectation. Hence, the actual usage lags behind usage expectations.

Hypothesis 3

Disconfirmation with product usage is lower in the earlier periods following purchase than in the later periods.

METHODOLOGY

The multi-functional product used in the experiment was the electronic calculator. 284 undergraduate students were used as subjects. Sixteen of these subjects were dropped from the analysis either because they did not own a calculator or because they did not complete the experiment. The experiment was conducted in two stages. In time period 1, the subjects were given a questionnaire that contained the following sections:

1) A 44-item Use Innovativeness Scale developed by Price & Ridgway (1983)
2) Measures for product usage (copy of questionnaire available on request)

They were asked to fill the questionnaires <u>without</u> referring to their calculators.

An attempt was made to improve the measures for variety seeking as follows:

(1) Not only were the number of functions purchased and the number of in-use functions measured but also the number of would-be-used functions (anticipated usage).

(2) The time period for which calculators had been owned was determined, so that individual differences in variety seeking could be compared controlling for period of ownership.

(3) Respondents were not asked how often they tried new things on their calculator or how long they used it (Price & Ridgway, 1983); instead, they were asked for the actual number and type of new uses to which they put their calculators.

(4) Respondents were also measured on the number of functions that they could operate over and above task requirements since this would be linked to their variety seeking drive.

When the respondents had completed the questionnaires, they were asked to bring their calculator at time period 2 to help complete the experiment.

In time period 2 (a few days later), the subjects were given a questionnaire that contained only measures on variety seeking. The respondents were asked to refer to their calculators and answer the questions. This was intended to give respondents an "objective" way of providing information on calculator usage patterns. This would also provide a way of checking for differences, if any, between this method and the self-reporting method used in time period 1 (when respondents could not refer to their calculators).

RESULTS

The Use Innovativeness Scale developed by Price & Ridgway (1983) was found to be quite reliable. The reliability of the scale items was estimated for each of the dimensions of use innovativeness (See Appendix 1). Except for Risk Preferences and Multiple Use Potential, the Cronbach's alpha was highly comparable to that obtained by Price & Ridgway (1983). A factor analysis was conducted to estimate the dimensionality of Use Innovativeness. <u>Four</u> factors emerged as significant, and Appendix 1 provides a comparison with the structure obtained by Price & Ridgway (1983).

Hypothesis 1

Hypothesis 1 was supported in full. The Scale developed by Price & Ridgway (1983) was used to measure the Use Innovativeness of the subjects. A summary of the results is shown on the next page.

Hence, Variety Seeking in Consumption (VSC) was shown to be related to not only current usage but also anticipated usage.

It was also found that no significant differences existed between the reports made by the subjects with and without looking at their calculators. For example, they reported using currently 75% of their calculator functions (looking at the calculator) versus 76% current usage (without looking at the calculator).

Hypothesis 2

It was found that people who had owned their calculators for 3 months had learned about 69% of the total functions on the keyboard. While those who had owned it for more than 3 months (up to 70 months), knew about 76% of the total functions. These two groups were significantly different in their operational knowledge ($t = 2.23$; $p < 0.03$).

This provides evidence to support that consumers go through a rapid learning process soon after purchase, but this declines rapidly and stabilizes. Consumers also seem to buy a much higher number of functions than they actually use.

PRODUCT USAGE ASPECTS

Aspect of Usage	Mean	Correl. with U.I.	Stat. sig.
1. No. of function keys purchased	35.9	.14	p<.05
2. No. of keys used	26.9	.15	p<.01
3. No. of keys known to operate	27.6	.13	p<.05
4. No. of keys expected to use in future	6.7	.10	p<.10
5. No. of uses to which calculator was put	2.4	.19	p<.01
6. No. of times manual was referred to	6.1	.14	p<.05

GROUP DIFFERENCES ON ASPECTS OF PRODUCT USAGE

Aspect of Usage	U.I. groups low	medium	high	F value	Stat. sig.
1.	33.4	34.8	39.4	3.1	p<.05
2.	23.8	26.7	30.2	4.5	p<.05
3.	25.0	27.8	30.0	3.2	p<.05
4.	6.0	6.9	7.2	0.3	**
5.	2.2	2.2	2.8	8.2	p<.01
6.	5.6	4.3	8.3	3.3	p<.05

** : statistically insignificant

Hypothesis 3

All subjects were asked whether they currently used less functions than expected. In other words, the subjects' disconfirmation in product usage (the difference between perceived expectation and actual usage) was measured.

The subjects were then divided into two groups: people who had owned their calculators for three months or less (Group 1) and people who had owned their calculators for more than three months (Group 2). (Three months was used for the cut-off since it was established that beyond this point, very little consumer learning took place).

Since the subjects were considered homogeneous in all respects for the purpose of analysis, the disconfirmation levels of Group 1 and Group 2 were treated as representative of the change in disconfirmation of subjects over time. It was found that the disconfirmation level of Group 1 was significantly lower than that of Group 2 ($t = 2.28$; $p < 0.03$). In other words, the subject had a lower level of disconfirmation in product usage during the early period following purchase (ie. first three months), and this increased significantly thereafter.

DISCUSSION

The Use Innovativeness Scale needs some modification. As can be seen, while the dimensionality of the factor structure is quite similar to that obtained by Price & Ridgway (1983), the Creative Reuse items loaded on the Creativity/Curiosity factor than on the Voluntary simplicity factor. Also, some of the Creativity items loaded on the Risk preference factor. This seems to conform with the suggestion of Price & Ridgway (1983) that perhaps Creativity is a major general factor and several smaller second-order factors exist. The Multiple-Use potential factor continued to perform poorly, with the lowest item-total correlations and coefficient alpha (0.44), and will have to be revised.

The Operationalization of consumer's expectation of both product performance and product usage was not feasible in a cross-sectional study of this kind. Consumer expectation varies over time, and hence needs to be measured at different points in time using a longitudinal study.

Replication of the study needs to be done across several sophisticated multi-functional products (such as microwave ovens, personal computers, stereo systems) to verify if disconfirmation in usage increases over time, and if consumer learning peaks early and tapers off subsequently.

It needs to be established, across several multi-functional products, whether consumers consistently buy more functions than they use, and if this type of purchase provides intrinsic satisfaction. It is also important to assess whether consumer needs change during the ownership period since this may affect the consumption and satisfaction. The marketer then needs to weigh the social cost of providing the consumer more and more functions against the consumer's psychological cost of dissatisfaction from not obtaining product value in the form of "expected usage".

Past research has looked predominantly at Variety Seeking in the Purchase Context. Research in Variety Seeking in Consumption offers excellent promise, especially because the consumption- satisfaction link can be explored in the context of variety seeking.

APPENDIX 1

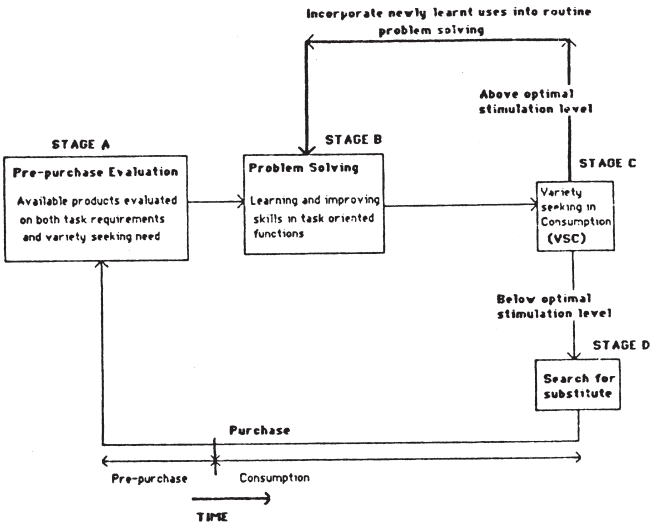
Comparison of Cronbach's alpha for UI Scale Items

UI dimensions	Price/Ridgway(1983)	Current Study
Creativity/Curiosity	0.86	0.85
Risk Preference	0.70	0.59
Voluntary Simplicity	0.64	0.63
Creative Re-use	0.82	0.80
Multiple Use Potential	0.56	0.42
Total Scale	0.91	0.90

Comparison of Factor Structure Obtained

	Factor 1	Factor 2	Factor 3	Factor 4
Price & Ridgway (1983)	Creativity/ Curiosity	Risk Preference	Voluntary Simplicity/ Creative Reuse	Multiple Use Potential
Current Study	Creativity/ Curiosity/ Creative Reuse	Risk Pref./ Creativity	Voluntary Simplicity	Multiple Use Potential

Figure A
Product Usage and Variety Seeking
in Multi-Functional Products



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