

Research

Identifying early adopters of new IT products: A case of Windows 95

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Abstract

This paper presents the findings of an empirical study into factors identifying early adopters of new IT products. Drawing two well-researched concepts (opinion leadership and consumer innovativeness) developed in the marketing field, several hypotheses were formulated to test against data collected from 145 microcomputer users who had or had not adopted Windows 95. The findings indicate that early adopters tend to be younger males who are of *opinion leadership* type, like to *seek novel information*, and have a lot of *computer experience*. Implications of the findings, from both a research and a managerial perspective are discussed. © 1998 Elsevier Science B.V. All rights reserved

Keywords: IT adoption; Opinion leadership; Consumer innovativeness; Independent judgment; Novelty seeking

1. Introduction

Each year, hundreds, if not thousands, of new hardware or software products appear in the IT market. While some of them may succeed, many others fail, representing significant financial and resource losses to the companies that developed them and brought them to the market. Literature in marketing suggests that a key success factor of new product introduction is identification and influence of those people who are the first to buy-in any given product market, i.e. innovators and early adopters in the well-known diffusion framework that categorizes individuals into five groups: innovators; early adopters; early majority; late majority; and laggards (e.g. [1]).

Opinion leadership and consumer innovativeness are two important concepts that have been proposed and developed by researchers in marketing to investigate their respective relationships with early adoption of a new product. Empirical studies have found that they are important factors affecting the diffusion and adoption of a new product [5, 9].

This study empirically examines the power of these two concepts in discriminating early from late adopters of new IT products. While some other studies have looked at reasons behind the adoption of new information technologies (e.g. [11, 14]), the present study focus more on the identification of early adopters. Windows 95 was chosen as the new IT product to be tested. The findings of the study should advance our understanding of the adoption process of IT products. From a practitioner perspective, the findings can help IT vendors in better allocating their marketing

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resources and improving the chance of new product success.

2. Adoption as an influence process

Adoption of a new product by an individual can be viewed as a process involving a number of stages that must be passed through in the individuals' decision to adopt [16]. Rogers [12] proposed that the adoption involves five basic stages (awareness, interest, evaluation, trial, and finally adoption) and that the adopters can be classified into five types (innovators, early adopters, early majority, late majority, and laggards). The duration of the adoption process is much shorter for early adopters than for the late adopters. The process can be viewed as one in which early adopters influence other potential adopters to try a new product. This may be direct, through dialogues between the two groups, or indirect, via role models from early to late adopters. Studies of adoption of new products based on this kind of social interaction concept have appeared in marketing studies. Two important concepts developed and discussed in such studies are opinion leadership and consumer innovativeness.

3. Opinion leadership

The concept of opinion leadership emerges from the assumption that individuals influence each other through interpersonal communication. Based on Rogers and Cartano [13], opinion leaders are "individuals who exert an unequal amount of influence on the decisions of others." They can influence their peers in several ways: (1) acting as role models who inspire imitation; (2) spreading information via word of mouth; and (3) giving advice and verbal direction for search, purchase, and use [3]. Many studies have demonstrated that this influence is significant in the communication of ideas and new product adoption diffusion [4]. Flynn et al. [3] further say,

"consumers appear to trust the opinions of others more than they do formal marketer-dominated sources of information such as advertising, and they use interpersonal sources to reduce risk and to make both store and brand choices."

Turnbull and Meenaghan said that the opinion leader in a social system can use his/her influence to exert positive or negative impact on the new product diffusion process. The opinion leader can be viewed as a 'gate-keeper' when he/she uses influence to hinder the progress of the adoption. Significant negative correlations between negative comments on a product and subsequent purchase of the product were found in a number of empirical studies.

4. Consumer innovativeness

Consumer innovativeness is another concept studied in consumer psychology as a link to the adoption of new products. The relationship is based on the belief that communicated experience of others may affect an individual's decision making [10]. Because of a dependency on communications, innovation of a specific product may vary under different situations. Two distinct conceptualizations of the nature of consumer innovativeness have been proposed and developed by Midgley and Dowling [10] and Hirschman [6].

The first classified innovativeness into different abstract levels: the highest level being 'innate innovativeness'. It was seen as a generalized personality trait possessed more or less by every member of society and defined as "the degree to which an individual makes innovation decisions independently of the communicated experience of others." In other words, individuals who possess a high degree of innate innovativeness do not rely on interpersonal communications in making the purchase decisions. Manning et al. [9] called this type of innovativeness "consumer-independent judgment making," which suggests that individuals may differ in terms of their reliance on others for information and assistance in making new product purchase decisions. Midgley and Dowling postulated that early adopters, who are willing to take the risk of adoption without getting ample information from the social system, tend to have a higher degree of consumer-independent judgment making.

Hirschman argued that innovativeness is more likely to be socially influenced than a personality trait. She proposed the idea of inherent novelty seeking, which is "the desire of the individual to seek out novel stimuli," and linked this construct to innovativeness. She argued that this inherent novelty seeking is the

predecessor of three types of actualized innovativeness: *adoptive*, where individuals actually adopt a new product; *vicarious*, where individuals seek information regarding a new product; and *use*, where individuals put existing products to new or different use.

Manning et al. [9] based on the theoretical foundation of Hirschman, defined consumer novelty seeking as “the desire to seek out new product information.” A three-stage longitudinal test of consumer-independent judgment making and consumer novelty seeking on the adoption process was conducted and the results showed that both factors were significantly associated with the adoption process.

5. Hypotheses

We assume that concepts of opinion leadership and consumer innovativeness can be applied for the adoption of new IT products. The following hypotheses were therefore formulated:

H1: The degree of an individual’s opinion leadership has no effect on the timing of his/her adoption of a new IT product.

H2: The degree of an individual’s independent judgment making has no effect on the timing of his/her adoption of a new IT product.

H3: The degree of an individual’s novelty seeking has no effect on the timing of his/her adoption of a new IT product.

Previous studies of factors affecting the adoption of IT have found that a number of individual characteristics, including computer experience, age, and gender, have significant impact on adoption (e.g. [7, 15]). Several additional hypotheses were therefore formulated:

H4: The computer experience of an individual has no effect on the timing of his/her adoption of a new IT product.

H5: The age of an individual has no effect on the timing of his/her adoption of a new IT product.

H6: The gender of an individual has no effect on the timing of his/her adoption of a new IT product.

These hypotheses were tested against data collected from 145 microcomputer users who had or had not adopted Windows 95.

6. Methods

6.1. Operationalization of the constructs

To ensure adequate reliability and validity of the measurement scales, instruments used to operationalize the constructs in this study were largely adapted from previous studies. *Opinion leadership* was measured by six items adapted from Flynn et al. [3]. As reported by them (also see Ref. [2]), this set of items was developed and tested in a series of five studies and it outperformed the old scale developed by King and Summers [8] in that it is shorter, shows convergent validity, has superior reliability, is more construct valid, and forms a unidimensional measure over a specific product domain. A seven-point Likert type was used, with anchors ranging from strongly agree (1) to strongly disagree (7).

Consumer novelty seeking and *consumer-independent judgment making* were operationalized by eight and six items, respectively. These items were adapted from the work of Manning et al. [9] in which the measures were found to have high reliability. Again, a seven-point Likert type was used, with anchors ranging from strongly agree (1) to strongly disagree (7).

Computer experience was measured by the number of months of hands-on computer use. *Adoption of Windows 95* was measured by asking the timing of the adoption relative to the subject peer group, i.e. one of the early adopters (defined as the first 25%), one of the late adopters (defined as not the first 25%), and non-adopters. Table 1 lists the measurement scale items for opinion leadership, consumer-independent judgment making, and consumer novelty seeking used in this study.

A preliminary questionnaire was developed and pilot-tested to assess logical consistencies, ease of understanding, sequence of questions, and task relevance. This resulted in a decision to make several modifications to the original questionnaire to clarify the meaning of certain questions. None of the responses in the pilot test were used in the final analysis.

6.2. Subjects

The questionnaire was sent to 354 employees of a large non-profit organization, of which 145 question-

Table 1

Measurement items employed in this study

Opinion leadership

1. My opinions on hardware/software products seem not to count with other people (e.g. my brothers/sisters, my schoolmates, or my friends)
2. When other people choose to adopt a hardware/software product, they turn to me for advice
3. Other people select hardware/software products rarely based on what I have suggested to them
4. I often persuade other people to adopt the hardware/software products that I like
5. Other people rarely come to me for advice about choosing hardware/software products
6. I often influence other people's opinions about hardware/software products

Consumer-independent judgement making

1. Prior to purchasing a new hardware/software product, I seldom consult my friends that have experiences with the new product
2. When it comes to deciding whether to purchase a new hardware/software product, I do not rely on experienced friends for advice
3. I seldom ask a friend about his or her experiences with a new hardware/software product before I buy the new product
4. I decide to buy new hardware/software products without relying on the opinions of friends who have already tried them
5. When I am interested in purchasing a new hardware/software product, I do not rely on my friends that have already used the new product to give me information as to whether I should try it
6. I do not rely on experienced friends for information about new hardware/software products prior to making up my mind about whether or not to purchase

Consumer novelty seeking

1. I often seek out information about new hardware/software products
2. I like to go to places where I will be exposed to information about new hardware/software products
3. I like magazines that introduce new hardware/software products
4. I frequently look for new hardware/software products
5. I seek out situations in which I will be exposed to new and different sources of new hardware/software products
6. I am continually seeking new hardware/software product experiences
7. When I go hardware/software shopping, I find myself spending a lot of time checking out new products
8. I take advantage of the first available opportunity to find out about new hardware/software products

naires were completed and returned for a response rate of 41%. Descriptive statistics relating to the variables measured in this study are shown in Table 2. Of the 145 subjects, 35 were early-adopters, 27 were late adopters, and 83 were non-adopters.

6.3. Test of measures and data analysis

The variables in this study were first evaluated for reliability by assessing the Cronbach's alpha. The values for opinion leadership, consumer-independent judgment making, and consumer novelty seeking are 0.88, 0.92 and 0.90, respectively; these are deemed acceptable. The hypotheses were tested using ANOVA to see whether subjects of different groups (early adopters, late adopters, and non-adopters) were significantly different in terms of opinion leadership, consumer-independent judgment making, consumer novelty seeking, computer experience, gender, and age.

7. Results

Table 3 shows the results of the analysis. Opinion leadership, consumer novelty seeking, computer experience, and gender were found to be significant factors in affecting the timing of adoption of Windows 95, while consumer-independent judgment making and age were found to be insignificant. Therefore, H1, H3, H4 and H6 were rejected while H2 and H5 were not.

8. Discussion

Opinion leadership was found to have a significant influence on the timing of adoption of Windows 95. Early adopters tended to be those who exhibited a high degree of opinion leadership, while late adopters were unlikely to be opinion leaders within their peer groups. There is a strong managerial implication of this

Table 2
Descriptive statistics of variables^a

Factors	Early adopters	Late adopters	Non-adopters
Opinion leadership ^b	3.41 (0.77)	3.89 (0.71)	4.14 (0.80)
Consumer-independent judgement making ^b	5.52 (1.16)	5.67 (1.06)	5.52 (1.10)
Consumer novelty seeking ^b	2.57 (0.83)	3.83 (1.21)	3.85 (1.09)
Computer experience (in months)	105.60 (42.46)	85.73 (44.40)	72.19 (46.32)
Age ^c	2.57 0.56	2.67 0.73	2.89 0.72
Gender	34 Male, 1 Female	19 Male, 8 Female	70 Male, 12 Female

^a Numbers shown are mean values while numbers in brackets are standard deviations.

^b Ranged from 1 to 7, 1 being leaning toward the positive side of the constructs and 7 being leaning toward the negative side of the constructs.

^c Ranged from 1 to 5, 1 being ≤ 20 , 2 being 21–30, 3 being 31–40, 4 being 41–50, 5 being over 50 years of age.

Table 3
Results of ANOVA

Variables	<i>p</i> -Value
Opinion leadership	0.000 ^b
Consumer-independent judgement making	0.808
Consumer novelty seeking	0.000 ^b
Computer experience	0.002 ^b
Age	0.052 ^a
Gender	0.012 ^b

^a Significant at $p < 0.10$.

^b Significant at $p < 0.05$.

finding. As opinions given by early adopters can be positive and negative, companies that developed new IT products and brought them to the market should focus their effort on ensuring that positive impression is obtained from this group of users.

Prior studies on the relationship between consumer innovativeness and the adoption process have suggested that both consumer novelty seeking and consumer-independent judgment making are significantly associated with the adoption process of new products. The results showed that consumer novelty seeking was positively related to the adoption of Windows 95, while consumer-independent judgment making was not. This finding suggests that whether or not an individual likes to seek novel information is important to his/her timing of adoption of new information technologies. On the other hand, whether an individual makes judgment independently may not be a decisive factor. It is likely, given the rapid advancement of new IT, that keeping up with the rapid growth of related knowledge is a significant factor.

Computer experience has a significant relationship on the timing of the adoption of new IT products. In

our study, early adopters of Windows 95 had significantly more computer experience than late adopters, who had significantly more computer experience than non-adopters. This implies that having significant computer experience may affect an individual's willingness to decide on the time of adoption.

This study has also found a significant relationship between the gender of an individual and his/her timing of adopting Windows 95. Early adopters tended to be male, while late adopters were more likely to be female. Moreover, age was found to be insignificant at $p < 0.05$, but significant at $p < 0.10$. In other words, early adopters tended to be younger.

9. Limitations

There are several limitations of this work that warrant mention. First, the study investigated just one single IT product, Windows 95. While it was considered to be appropriate for this study, generalization of the findings should not be encouraged. Further work should be performed on different products, for example subscription to Internet services, to reconfirm the results obtained here. Second, the measurement scales used in this study were adapted from prior studies in marketing. While they were found to be reliable, more work is suggested to validate and refine these scales.

10. Conclusions

This study was a test of using two well-researched concepts developed in marketing for the investigation

of factors identifying early adopters of new IT products. Opinion leadership and consumer innovativeness were operationalized and tested to determine their relationship to the timing of the adoption of Windows 95, based on data collected from 144 individuals. Opinion leadership and consumer novelty seeking were found to be important factors differentiating early adopters from late adopters. Also, several demographic characteristics of IT users, including computer experience and gender, were significant in determining the timing of the adoption.

From a practitioner's perspective, the findings of this study suggest several indicators for identifying early adopters of new IT products. These can help IT vendors in better allocating their marketing resources and improving the chance of new product success.

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