

**Marketing and Interactive Devices:  
Does a Rose By Another Name Smell the Same?**

**Ruby Roy Dholakia  
Nikhilesh Dholakia**

Research Institute for Telecommunications  
and Information Marketing (RITIM)  
College of Business Administration  
The University of Rhode Island  
7 Lippitt Road  
Kingston, RI 02881-0802 (USA)  
Phone: 401-874-4390  
Fax: 401-874-4312  
Email: ruby@uri.edu

Acknowledgments: Financial assistance for this study was provided by RITIM, College of Business Administration at The University of Rhode Island and by Group Disa, a leading resource for understanding Information Age Markets. Paul Pereira helped in data collection.

# **Marketing and Interactive Devices: Does a Rose By Another Name Smell the Same?**

## **Abstract**

Technological developments are blurring the distinctions between TV and PC-based interactive capabilities but widespread consumer acceptance continues to be a critical challenge. After reviewing the concept of interactivity, the paper reports an empirical study that looks at consumer responses to interactive devices. Offering identical benefits but calling it a TV-based or a PC-based interactive device leads to significant differences in the evaluation of the concept. Both the respondent's sex and prior ownership of a computer influences the consumer responses. Findings from the study are interpolated with technological developments to discuss implications for marketing.

Keywords: Interactivity, PC-TV, Interactive TV

## INTRODUCTION

Technological developments continue to blur the distinctions between computers and other devices with interactive capabilities, between fixed and mobile devices, and between workplace and home. While early web sites were mostly text-based, technological developments now allow for a variety of features that combine the advantages of print and electronic media in order to provide customised information as well as more vivid forms of communication (motion, audio and video files etc.). As a result, consumers have increased choices regarding interactive content as well as interactive devices that go beyond simplistic voice and text messaging, games and software packages. Direct marketers who have learned to use a variety of media to reach specific target markets must now incorporate multiple interactive devices in their plans of action. The key question is how will this increased variety in devices influence consumer access and use of marketing information? For the consumers, this question is of obvious interest; for the marketer, the answers will determine success in the new media environment.

In this paper, we examine the specific question of computer vs. television as interactive devices. The first part of the paper summarizes some of the key issues regarding interactive multimedia devices. The second part describes an empirical study that investigates consumer acceptance of interactive devices. At the end, overall conclusions for marketing are developed based on the findings of the specific study supplemented by developments in the technological world.

### **Interactivity**

Some researchers believe that the *interactive* nature of the new media, i.e. the ability of the user to receive and transmit messages, creates a totally new communication environment. Instead of the traditional model of one-to-many communication, the Web is a "many-to-many" channel of communication (Hoffman and Novak 1996; Rust and Oliver 1994; Venkatesh, Dholakia and Dholakia 1996). Interactivity has two key characteristics: it is multidimensional and it is a continuum. Williams, Rice and Rogers' (1988) definition of interactivity includes three dimensions - control, exchange of roles and mutual discourse. Ha and James (1998) identified five dimensions of interactivity – playfulness, choice, connectedness, information

collection and reciprocal communication. While recognized as a multidimensional concept, marketers implement interactivity in many different ways. In a survey of 101 web sites, Ghose and Dou (1998) found several examples of interactive features that they grouped into five categories – customer support, marketing research, personal-choice helper, advertising/promotion/ publicity and entertainment features.

Interactivity is also a continuous construct; it is not just a matter of “either you have it or you don’t” (Heeter 1989). It is a quality of a communication setting, which can *vary* within the same medium (Rafaeli, 1990). A website, for example, could simply be a page of text without any links, feedback options or search engine. Such a site would score very low on the interactivity continuum even though it is part of a *potentially high* interactive medium. Conversely, some television broadcasts such as infomercials and shopping channels that allow for immediate response through the use of toll-free telephone numbers or on-the-air live interaction with the show’s hosts would score much higher on the interactivity continuum even though the medium itself is considered low in interactivity. This example also illustrates the use of multiple media to achieve interactivity in a communication setting.

As technology evolves, we will probably see an increase in the interactive capabilities. Rafaeli (1990) has argued that once-passive audiences even within traditional mass media are now more active with letters to the editor, on-the-air talk shows, infomercials etc. Both trends – technology changes and audience behaviors – are likely to fuel increased use of interactive features in the future.

### **Interactive Devices and User Control**

User control, as a dimension of interactivity, is viewed as the ability of the user to personalize and customize their experience by being able to choose what they see and hear, when they see and hear it and how and when they respond to it. For instance, in terms of interactive advertising, when an ad pops up on a web page, the user can choose to click on it and find out more about the product or service. Users will have a feeling of control, a dimension proposed by Williams et. al (1988), when they can choose between “text only” and “text plus graphics”, select the language, or use a search engine to find the information they want. It is considered explicitly in definitions of interactivity (e.g. Williams, Rice and Rogers 1988; Fortin 1998) or is implicit in

all other definitions. Bezjian-Avery, Calder and Iacobucci (1998) emphasise user control in their definition of interactivity.

In these discussions of user control, the emphasis is on accessing information that has already been created, such as interactive advertising and is influencing technological developments such as protocols for wireless devices. “ Sun Microsystems and its partners, manufacturers, and telecommunications service providers in the wireless market space have begun shipping the Mobile Information Device (MID) profile, a blueprint designed to show application developers how to develop open, standards-based technologies using Java for more personalized, dynamic, interactive wireless applications. ..Developers will be able to create applications that will allow users to download services and software into wireless devices” (Williams, 2000). User control can also be expressed in terms of creating and distributing content, with the user deciding what, where, when and how to share self-created information. The user is not only the receiver but sender of messages; Heeter (1989) defines this as “the degree to which users can add information to the system that a mass undifferentiated audience can access”.

In addition, there are differences in devices used to create and access interactive content. Hoffman and Novak (1996) distinguish two levels of interactivity: person-interactivity that occurs between humans through a medium and machine-interactivity which occurs between humans and machines. It is not surprising that interactivity is available in an increasing variety of devices. On the Internet, it started with a personal computer; but now, it is expanding rapidly into various new technologies such as DVD-video players, vending machines, TVs and WAP phones. Sony, for instance, believes it will cater to the interactive culture through several “gateway devices such as cellular phones, PlayStation game machines, digital televisions and the Vaio line of PCs” (Guth 2000). One of the early companies that offered an interactive device allowing both access and creation of interactive content was Apple Computers. Its Pippin model was not only a computer with software programs for word processing, spreadsheet and database, but also featured a 14-inch color TV that could be connected to a VCR, camcorder, video laser-disc player and CD-ROM (“Apple’s New E-in-1 Unit..”, 1996). Similarly, U.S. Robotics attempted to market Bigpicture Video Kit that allowed “a new way to have fun with your

computer” including emailing video images, capturing video streams from the Internet and editing home movies on the VCR.

## **UNDERSTANDING CONSUMER USE OF INTERACTIVE MEDIA**

Early studies of interactive technologies had shown disappointing consumer interest (Lee and Lee 1994; Neuman 1991) but more recent attempts have been more positive. The explosion in number of people accessing various websites (e.g. measured by Nielsen/NetRatings) and the increased spending on online interactive advertising (Internet Advertising Bureau 2000) are provided as examples of consumer interest in interactive media. Examined directly within an advertising context, Fortin and Dholakia (2000) found interactivity to increase involvement and social presence. Bandopadhyay (1999) found that recall, likeability and purchase intent levels were higher for internet based ads than for similar print ads. Venkat and Sobey (1999) measured click-through rate, recall and attitude (Aad) and found significant effects of consumer involvement and ad size on effectiveness. Ghose and Dou (1998) found a positive effect of interactivity on Website attractiveness/quality. Rich media e-mail, in particular, is receiving a lot of attention because its interactive, graphically pleasing advertisements generate brand awareness and stickiness amongst its audience (Iconocast 2000).

### **What’s In a Name?**

Most of the research on interactivity has taken place in a computer-mediated environment with a computer as the interface device. In the U.S., interactive services delivered through TV or special telephone terminals have not made much impact. This is about to change. “The latest twist in home décor is a box that looks like a TV but acts like a PC, that’s stylish enough for the family room and still powerful enough to crunch a spreadsheet or surf the Web” [Lemos, 1997]. These “enhanced” TVs allow surfing as well as receive a broad range of audio and video signals from stereos, VCR and other electronic devices. As noted by Desmond [1998], the charge seems to be to build “a powerful set-top box – a computer really – on top of every TV, delivering not just video but rocket-powered Internet access for everything from financial services to videophone conversations” (p. 67).

According to Nicholas Negroponte of MIT's Media Lab, it does not matter whether the interactive, multimedia appliance is called a TV or a PC because the capabilities are going to be identical. Despite the support of powerful product champions, developers are cognizant of the challenges. As Phil Goldman, co-founder of WebTV recognized "We just don't want to provide Internet access to the TV; we want to provide a better TV experience. Customers won't settle for less" (quoted in Lemos 1997).

It is not quite clear that the market is ready to embrace this new TV/PC product. As critics note: "There has been tremendous resistance to putting a computer in the living room, and not just because the typical PC is an ugly beige box (note that both the Destination and the WorldVision are an attractive ebony). Imagine the family clicker wars that will rage when Johnny wants to write a paper Lucy wants to surf the Web, and Dad wants to catch the Knicks..." (Jerome 1996). Evidence from recent product introductions continue to fuel the debate. As one commentator on Sony's airboard – an Internet-capable appliance comments: "as a television, airboard delivers beautiful, clear images on its 10.4-inch liquid display screen. Subscreens can be reduced to about one-sixth the main screen and relegated to a corner for users who wish to make TV-watching a secondary endeavor (*Internet devices lack mass appeal*, March 2001, p. F5). But there is little direct research on the nature of interactive devices and consumer responsiveness.

### **An Empirical Investigation**

In this paper, we focus on an empirical investigation of the interactive device; we specifically focus on the TV/PC debate. The visions articulated by the TV/PC product champions reveal certain underlying assumptions about market and user behaviors. The combination of TV and PC into a single unit may blur the product category distinctions but to the consumer, it may not mean the same. From an information processing point of view, the new concept will be differentiated and structured based on existing categories (Coupey and Nakamoto, 1988). Consumer responses such as concept evaluation (good-bad), purchase intention (will buy/will not buy) and behavior (active/passive) will be influenced by the category label - PC or TV - activated in memory. As Guy D. Johnson, Vice President of Thomson Consumer Electronics succinctly stated: "its been a battle of cultures just deciding if this thing

should be called a PC/TV or a TV/PC” (quoted in “ Information Appliance” Business Week, June 24, 1996, p. 98).

There are two main research questions addressed in the empirical study:

1. Does a label for an interactive device influence consumer responses? and
2. Can sex and prior experience of the consumer explain differences in responses?

### **Interactive Product Concepts**

In order to address the TV/PC product configuration, two concepts were formulated for a new interactive appliance. Identical set of features and benefits were described for two options – one called a TV and the other called a PC. Each allowed a combination of video, digital stereo sound, text, graphics and animation and included use of various peripheral devices. The user could create content as well as access, display and manipulate pre-created content. It enabled several active and passive usage options.

### **Research Procedure**

The procedure involved randomly assigning the PC or TV interactive product concept to a sample of respondents recruited to participate in a survey on new products. From a list broker, names were purchased using two criteria: ownership of a computer at home or household income of \$35,000 or more. Two cities - San Jose, California and Rochester, New York - comparable in terms of size and socioeconomic characteristics, were selected for the study.

A very structured questionnaire was sent by mail. Approximately, 5000 questionnaires were mailed out, half the sample receiving the PC interactive concept and the other half receiving the TV interactive concept. No incentives were offered and the questionnaire was mailed only once. A total of 640 questionnaires were received as replies (12.8% response rate).

### **Hypotheses**

**Product Label.** Given the very distinct visions regarding TVs and PCs as interactive devices, our most basic hypothesis was regarding the specific concept: Calling it a TV-based or a PC-based interactive device, we hypothesized, would make a meaningful difference to the buying public.

- H1: The product label – PC or TV – will influence consumer acceptance of the new interactive device.

In addition, we had specific hypothesis regarding the influence of two specific demographic characteristics– sex and prior experience of the respondent - on the acceptability of the devices.

**Sex.** Technologies have strong connotations with sex: "technology, like all aspects of 'progress', is usually thought of as a masculine invention and activity (Kramarae, 1988). Research in telephones, television, VCRs and computers suggest that there are specific gender differences in the use of these technologies. Telephones, for instance, are associated with females (Rakow, 1988). TV remote control and computers, on the other hand, seem to be strongly masculine in its image and use (Arch and Cummins, 1987; Beville, 1988; Kiesler and Eccles 1985). Although early studies have shown greater interest in online services by men, gaps in the gender profile are diminishing among current Internet users but not globally (NUA Surveys). One would expect, therefore,

H2: Male respondents will like interactive multimedia devices more than females at this point in time. And, males are expected to like interactive PC devices more than interactive TV devices.

**Prior Experience.** Prior experience with a similar or related technology is very important in the perception and evaluation of an innovation in terms of relative advantage, complexity and perceived risk (Gatignon and Robertson, 1985). Experience provides skill and knowledge. When experience is favorable, it improves the receptivity to related products and services. Dholakia (1996) for instance, found a positive interest in Movies-on-demand among individuals with a high investment in video technologies at home. Experience also creates barriers to adoption if it means obsolescence of investments in skills or products. Videodiscs, for instance, did not receive ready and large acceptance because of consumers' investment in VCRs and videotapes (Secunda 1990).

For consumers with access to or ownership of a computer at home, the experience provides skill and knowledge which is not available to consumers without such easy access. One would expect, therefore, that:

H3: Consumers having prior experience with computers at home would be more receptive to interactive multimedia devices in general and computer interactive multimedia devices in particular.

## **Dependent Variables and Their Operationalization**

Survey respondents were asked to answer questions regarding Perceived Benefits of the Concept, Overall Evaluation of the Concept, Intention to Try and Purchase the Interactive Multimedia Appliance, and the Total Dollars likely to Pay. The specific items are listed in Exhibit 1. Reliability coefficients for the multi-item scales - perceived benefits (Cronbach's  $\alpha=0.9$ ), overall acceptance (Cronbach's  $\alpha=0.8$ ), and behavioral intention (Cronbach's  $\alpha=0.9$ ) - are high and acceptable.

Exhibit 1 About Here

## **FINDINGS**

### **Sample Composition**

The sample characteristics indicate that the individuals who responded to our survey are educated, upscale consumers (see Table 1). These characteristics are known to be positively related to adoption of innovations and conformed to the requested sample selection criteria. Table 1 also reveals that there are no systematic differences in the sample that received the TV-based interactive concept from the sample that received the PC-based interactive concept in terms of education, occupation, and number of children under 18 living at home. The chi-square test revealed a significant difference only for age, with slightly younger respondents in the TV-based concept sample. We conclude that there is no systematic bias in the sample composition. Further, because of the sample selection procedure, we also feel a great deal of confidence regarding the sample's external validity.

Table 1 About Here

### **Manipulation Check**

The product label has no effect on the perception of benefits ( $F=1.7$ ,  $df=1/601$ , ns). This suggests that the manipulation was successful in conveying comparable benefits for both the TV-based and PC-based interactive devices.

### **Purchase Intention and Willingness to Pay**

Intention to purchase the new product was very modest despite the very upscale composition of the survey sample; only 10.8 percent of the total sample expressed strong willingness (responded strongly or very strongly) to purchase the new product ( see Table 2).

Respondent willingness was greater for the TV-based concept (12.3%) than for the PC-based concept (9.3%). Among those showing a definite interest in purchasing the new interactive device, more people (56.7%) were willing to pay a higher price for the PC-based interactive device than the comparable TV-based device (33.3%).

Table 2 About Here

### **Effects of Product Label, Sex and Prior Experience on Evaluations and Intentions**

In order to determine the effects of the product label, sex and prior experience on the evaluation of, and intentions regarding the new interactive device, an analysis of variance was performed (see Table 3).

Table 3 About Here

**Effect of Product Label:** While the manipulation check showed that similar benefits were associated with the two product concepts, the product label did significantly influence the evaluation of the interactive device ( $F=11.7, p<.00$ ); the effect was marginal on behavioral intentions ( $F=2.4, p<.13$ ) and it had no effect on dollar willing to pay. This strongly supports our first hypothesis only regarding evaluation of the product concept.

**Effect of Respondent's Sex:** The respondent's sex has a significant effect on behavioral intentions ( $F=10.7, p<.00$ ), and dollar willing to pay ( $F=10.3, p<.00$ ) and only a marginal effect on concept evaluation ( $F=2.8, p<.09$ ). Specifically, males show greater intentions to purchase the new interactive device and to pay a higher price for it. This supports our hypothesis two regarding the effect of respondent's sex on consumer responses.

**Effect of Prior Experience:** The consumer's prior experience with computers has a significant effect on all three dependent variables, strongly supporting hypothesis three. Respondents with computers in their homes were more positive about interactive devices than non-computer owners; they express stronger intentions to purchase interactive devices as well willingness to spend more money than non-owners.

**Interaction Effects:** Hypotheses were offered for two types of interactions: between product label and sex – with males likely to show stronger affinity for PC-based devices; and between product label and computer ownership – with computer owners likely to show stronger affinity for PC-based devices. We found marginal support for two way interactions only for behavioral intentions but not for the concept evaluation or for dollar willing to pay. The mean values suggest

that computer owners rated the TV-interactive device the highest while non-owners rated the PC-interactive device the lowest. Similarly, males rated the TV-interactive device the highest which females rated it lowest. However, the differences are significant only marginally.

## **DISCUSSION AND CONCLUSIONS**

The form of multimedia -- TV-based or Computer-based -- makes a big difference in consumer acceptance of the new product concept. Even though the two concepts were identical in their configuration and promised benefits, the TV-based interactive device appears to elicit more favorable evaluations than the PC-based interactive device. The difference does not appear to be in lack of recognition of the promised benefits; instead, the primary appeal of the TV-based interactive concept is its perception as being exciting, something that can be used often.

Computer owners also evaluated the interactive concept more favorably than non-owners. Existing repertoire of knowledge and behaviors appear to be relevant as Dickerson and Gentry(1983) have reported for the adoption of computers. Prior familiarity with computers, however, does not restrict consumers' judgments; in fact, they seem to find the TV-based interactive device more attractive than the identical PC-based concept. No wonder that TV is seen as the the next frontier in multimedia, interactive devices. However, the findings from this study suggests that the early adopter and user of the interactive TV will not be the "couch potatoes" who seem to elude the clutches of computer marketers. Instead, the TV-based interactive device will become an additional outlet for the PC user.

In this research we also find empirical support for gendered responses to technological choices. The interactive concept – both TV and PC versions - was more attractive to males than females. This is consistent with existing knowledge regarding consumer behavior.

### **Who is the Interactive TV User?**

The findings raise an interesting dilemma in the PC/TV product development that has been the subject of much speculation. The computer user is viewed as being active, seeking information; the TV viewer as passive, receiving information. Will consumers want to use their TV actively? In a review of data on media use, Stipp (1998) concluded that (a) most PC and Internet users ascribe different functions to the PC and TV; (b) most PC users have not significantly reduced their TV viewing behaviors; and (c) distinct segments exist in media usage behaviors. Therefore,

“there will be convergence in TV and PC usage among some segments, some of the time, with and without new converged appliances” (Stipp 1998, p.18)

The findings from this research study suggest that an interactive TV is appealing, but more to the computer user already familiar with interactivity. Investments in TV-based interactive devices, therefore, are likely to succeed precisely because they are interactive but their appeal will be more to the PC users themselves. Instead of widening the market to include non-PC users, as many computer makers are targeting, it is more likely to deepen interactive use among PC owners. Instead of losing the TV viewer to the PC screen, it is likely to attract the PC user to an interactive TV screen. This is consistent with a PC user wanting to use the TV as if it was a PC. Gartner Research, for instance, has suggested that more people are participating in interactive activities in the same room as their television (Swedlow 2000) but they use a personal computer and a television rather than a TV/PC integrated device. Perhaps this is due to product design deficiencies.

### **Implications for Marketers**

The popularity of the Internet and the Web as a marketing medium will continue to attract interest as the number of consumers connected to the Net increases, not only in the U.S., but globally. All kinds of marketers – those with only brick and mortar presence as well as Internet e-commerce sites offering purely digital products – will be attempting to take advantage of the interactive features of the new media to attract visitors to their sites and achieve their communication and marketing objectives.

Marketers in the U.S. may feel complacent, because “Internet appliances have been received with less than great enthusiasm in the United States” (Guth 2000). Our results also show modest, not roaring, consumer interest in the new interactive device. This complacency will be ill-advised in today’s global economy because the story is different overseas. “In general, international telecom infrastructures are newer and more easily upgradeable, which has enabled network operators to develop and deploy iTV capabilities sooner. Interactive TV services has been rolled out in several European, Asian and Latin American countries”. According to the Yankee Group, ITV-based households will exceed PC-based households in Europe because the “Western European Internet consumer – (is) interested in Internet via their TV, eager for known

brand names to deliver services and cost- and space-conscious regarding new devices” (“PC Based Internet to be Eclipsed in Europe by ITV by 2005, March 16, 2001).

The variety in interactive devices suggest many more fragments in consumer segments and the increasing complexity in the design of interactive communications. The following are possible segments:

- PC-centric consumer – who views interactivity through the lens of the PC regardless of the actual device;
- TV-centric consumer – who approaches interactivity through the TV screen with video and entertainment as key interactive features;
- Phone-centric consumer – who views interactivity through the phone with voice-based technologies as a key characteristic; and
- The poly-centric consumer – who adjusts to multiple devices and uses interactive features flexibly.

Marketers need to incorporate the multiple devices in their plans of action, and the size and composition of these segments will determine the nature of interactive communications.

Different consumer segments will put different emphasis on various interactive features. The PC-centric consumer using the TV to access the Web is likely to be very different than the TV-centric consumer also using the TV to access the Web. Marketers not only have to deal with technological differences in the various devices and their ability to incorporate alternative interactive features; they will also have to consider the user expectations and behaviors as the consumer moves between multiple devices.

### **Limitations and Future Research**

The past literature had examined interactivity only in terms of interactive content but interactive devices are an important contributor to end-user experiences. This research looked at some initial responses to new interactive devices. There are many more devices to explore. Even after acquiring a particular device, consumers adapt and extract varying sets of benefits from specific devices. Future research needs to address some of these issues. In the global environment, different factors are propelling the growth of technologies and user behaviors. In this context, researchers and marketing managers have to learn from a wider field of experiences.

### **Conclusion**

As we look ahead, we know that the medium will continue to evolve. It is much too early to tell what shape interactive marketing will take and how it will shape consumer attitudes and behaviors in the future. The interactive features of the Web are embedded in its digital properties and not all marketers can fully utilize these features of the new media. Because interactivity can increase user control, it is likely to enhance the viewer's sense of involvement. "Ultimately, designing and developing for these new characteristics provides a better end-user experience than just simply enabling web surfing on a TV (MetaTV 2001).

**Table 1**  
**Sample Composition**

| Respondent Characteristics | PC-Based Interactive Device | TV-Based Interactive Device | Total Sample |
|----------------------------|-----------------------------|-----------------------------|--------------|
|                            | 323 50.4%                   | 318 49.6%                   | 641 100%     |
| Sex:                       |                             |                             |              |
| Male                       | 205 32.0%                   | 194 30.3%                   | 399 62.2%    |
| Female                     | 118 18.4%                   | 124 19.3%                   | 242 37.8%    |
| Age*:                      |                             |                             |              |
| 18-34 years                | 57 8.9%                     | 75 11.7%                    | 132 20.6%    |
| 35-54 years                | 175 27.3%                   | 180 28.1%                   | 355 55.4%    |
| 55 and over                | 92 14.4%                    | 61 9.5%                     | 153 23.9%    |
| Education:                 |                             |                             |              |
| No College                 | 43 6.7%                     | 53 8.3%                     | 96 15.0%     |
| Some College               | 85 13.3%                    | 76 14.9%                    | 161 25.1%    |
| College Degree             | 195 30.4%                   | 189 29.5%                   | 384 59.9%    |
| Children Under 18 at Home: |                             |                             |              |
| None                       | 209 32.6%                   | 199 31.0%                   | 408 63.6%    |
| One                        | 43 6.7%                     | 44 6.9%                     | 86 13.6%     |
| Two or more                | 69 10.8%                    | 75 11.7%                    | 144 22.5%    |

\* significant difference in age

**Table 2**  
**Willingness to Accept Interactive Multimedia**

| Willingness or Interest measure              | PC-Based Interactive Device | TV-Based Interactive Device | Total Sample |
|--|-----------------------------|-----------------------------|--------------|
| Definite interest in purchasing <sup>1</sup> | 9.3%                        | 12.3%                       | 10.8%        |
| Money Willing to Pay:                        |                             |                             |              |
| \$0  | 44.7%                       | 35.5%                       | 40.1%        |
| \$1-\$500                                    | 30.9                        | 46.9                        | 38.9         |
| over \$500                                   | 24.4                        | 17.6                        | 21.0         |
| Money Willing to Pay <sup>2</sup>            |                             |                             |              |
| Over \$500                                   | 56.7%                       | 33.3%                       | 43.5%        |

<sup>1</sup> Responses = 4 or 5 on a 1-5 scale.

<sup>2</sup> Reported by those showing definite interest in purchasing the new product concept.

**Table 3**  
**Effects of TV/PC Concept, Gender and**  
**Computer Ownership on Consumer Judgments**

|                        | <b>Evaluation of<br/>Interactive Device<br/>df=1/607</b> | <b>Behavioral Intentions<br/>df=1/624</b> | <b>Dollar Willing to Pay<br/>df=1/616</b> |
|------------------------|--|---|---|
| TV/PC Concept (C)      | F=11.7, p<.00  | F=2.4, p=.13                              | F<1, ns                                   |
| Respondent's Sex (S)   | F=2.8, p<.09   | F=10.7, p<.00                             | F=10.3, p<.00                             |
| Computer Ownership (O) | F=7.4, p<.00   | F=16.3, p<.00                             | F=6.7, p<.01                              |
| Two Way Interactions   |  |   |   |
| C x S                  | F<1, ns  | F=2.6, p<.11                              | F<1, ns                                   |
| C x O                  | F<1, ns  | F=2.6, p<.11                              | F<1, ns                                   |
| S x O                  | F<1, ns  | F<1, ns                                   | F<1, ns                                   |
| Three Way Interactions |  |   |   |
| C x S x O              | F<1, ns  | F<1, ns                                   | F<1, ns                                   |

**Exhibit 1**  
**Dependent Variables and Their Operationalizations**

**Perceived Benefits: (Cronbach alpha = .9)**

Rating of the likelihood the following benefits will be received from the multimedia concept described on a 1..5 scale where 1=very unlikely and 5=very likely.

- Be easy to use
- Provide a clear picture
- Enable starting and stopping at different time periods
- Enable selecting and viewing the video in any sequence
- Enable manipulation of the video images - such as moving, turning images within video
- Enable editing and creating video images through use of a videocamera.

**Concept Evaluation: (Cronbach alpha = .8)**

Agreement with the following statements regarding the multimedia concept on a 5 point scale where 1=strongly disagree and 5=strongly agree.

- Appears to be too complicated.
- May not be fun to use.
- Fits my lifestyle.
- Is something that I can use often.
- Seems more trouble than it is worth.
- Will be popular with my friends.
- Is likely to be more exciting than regular videotapes.

**Behavioral Intention: (Cronbach alpha = .9)**

Agreement with the following statements regarding the multimedia concept on a 5 point scale where 1=strongly disagree and 5=strongly agree.

- I would like to see a demonstration of this product.
- I would be interested in trying this out in my home.
- I would definitely be interested in purchasing this product.

**Willingness to Pay: Amount of money willing to pay for the concept.**

- |                |                  |                  |
|----------------|------------------|------------------|
| (1) \$0        | (2)\$1-200       | (3)\$201-\$500   |
| (4)\$501-1,000 | (5)\$1,000-2,000 | (6) over \$2,000 |

## References

- "Apple's New 3-in-1 Unit Combines PC, CD and TV" (1996), *Wall Street Journal*, October 26, B-2.
- Arch, E.C. and Cummins, D.E. (1989), "Structured and Unstructured Exposure to Computers: Sex Differences in attitudes and use among College Students," *Sex Roles*, 20, 245-254.
- Bandopadhyay, S. (1999) "Web-Based Advertising: Panacea for All Advertising Woes?" in R. R. Dholakia and S. Wikstrom (eds.) *Electronic Commerce: Behaviors of Suppliers, Producers, Intermediaries & Consumers*. Proceedings of COTIM99, RITIM: The University of Rhode Island, Kingston, R.I
- Bevelee, H. M. (1988), *Audience Ratings*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Bezjian-Avery, A., B. Calder and D. Iacobucci (1998), "New Media Interactive Advertising vs. Traditional Advertising," *Journal of Advertising Research* (July-August), 23-32.
- Boyd, John (1998) "Electronics giants flex their muscles," *The Japan Times*, May 27, p. 12.
- Coupey, Eloise and Nakamoto, Kent (1988) "Learning Context and the Development of Product Category Perceptions" *Advances in Consumer Research*, 15, 77-82.
- Desmond, Edward W. (1998), "Malone Again" *Fortune*, February 16, 66-69.
- Dholakia, Ruby R. (1996) "Taking Movies on Demand to Market," in *New Infotainment Technologies in the Home: Demand Side Perspectives*. Ruby R. Dholakia, Norbert Mundorf and Nikhilesh Dholakia (ed.). Mahwah, N.J.: Lawrence Erlbaum Associates. 75-90.
- Dickerson, Mary Dee and Gentry, James W. (1983) "Characteristics of Adopters and Non-Adopters of Home Computers," *Journal of Consumer Research*, 10 (September), 225-235.
- Fortin, D. R. (1998) *The Impact of Interactivity on Advertising Effectiveness in the New Media*. Ph.D. Dissertation, College of Business Administration, The University of Rhode Island.
- Fortin, David R. and Ruby Roy Dholakia (2000) "The Impact of Interactivity and Vividness on Involvement: An Empirical Test of the Hoffman-Novak Model" at 2nd Marketing Science and the Internet Conference on Understanding Consumer Behavior on the Internet, April 28-30, 2000 University of Southern California, Los Angeles.
- Gatignon, Hubert and Robertson, Thomas S. (1985) "A Propositional Inventory for New Diffusion Research", *Journal of Consumer Research*, 11 (March), 849-867.
- "Gender Gap has almost disappeared in the US," (2000) NUA Internet Surveys (January 25)  
<http://www.nua.ie/surveys/trendmuncher/archives/>
- Ghose, S. and W. Dou (1998) "Interactive functions and their impacts on the Appeal of Internet Presence Sites," *Journal of Advertising Research*, (March-April), 29-43.
- Guth, Robert A. (2000) "Sony's mobile device – next Walkman? (May 15, 6:38 AM PT) WSJ Interactive Edition, URL: <http://www.zdnet.com/zdnn/stories/news/0,4586.2569437.00.html>

- Ha, Louisa and James, E. Lincoln (1998), "Interactivity Reexamined: A Baseline Analysis of Early Business Web Sites," *Journal of Broadcasting and Electronic Media*, Vol. 42, number 4, 457-474.
- Heeter, Carrie (1989), "Implications of New Interactive Technologies for Conceptualizing Communication," in: Salvaggio, J.L. and J. Bryant, editors. *Media Use in the Information Age*. Hillsdale, N.J.: Lawrence Erlbaum, 217-235.
- Hoffman, Donna L., and Novak, Thomas P. (1996), "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing*, Vol. 60, July, 50-68.
- Iconocast (2000) "Better Banner Variants" in discussion list iconoclash@topica.com
- "Internet devices lack mass appeal," (2001) *Providence Sunday Journal*, (April 1), F5.
- Jerome, Marty (1996), "PCTVs: Where the Black Box meets the Boob Tube," *cnet.com*  
<http://www.cnet.com/content/Reviews/Compare/PCTV/>
- Kiesler, S., Sproul, L and Eccles, J.S. (1985) "Pool halls, chips, and war games: Women in the culture of computing", *Psychology of Women Quarterly*, 9, 451-462.
- Kramarae, Cheris (1988) "Gotta Go Myrtle, Technology's at the Door" in Kramarae, Cheris (Editor), *Technology and Women's Voices: Keeping in Touch*, Routledge & Kegan Paul, New York, p. 1-14.
- Lemos, Robert (1997) "Microsoft's billion-dollar WebTV bet," *ZDNet News on The Pointcast Network*, October 2.
- Lin, Carolyn A. (1990) "Audience Activity and VCR Use" in Julia R. Dobrow (ed), *Social and Cultural Aspects of VCR Use*, Hillsdale, N.J.: LEA Publishers, 75-92.
- Lee, Barbara and Lee, Rober (1995) "How and Why People Watch TV: Implications for the Future of Interactive Television". *Journal of Advertising Research* (November/December): 9-18.
- MetaTV (2001) "What is ITV?" URL: <http://www.metatv.com/>
- Neuman, W.R.(1991) *The Future of the Mass Audience*, Cambridge University Press, Cambridge, MA.
- "PC-Based Internet To Be Eclipsed In Europe By ITV By 2005" (2001)  
<http://www.itvreport.com/news/0301/032701itvus.htm> (March 16)
- Rafaeli, Sheizaf: Interacting with Media: Para-Social Interaction and Real Interaction, in *Mediation, Information and Communication*, B. Ruben and L. Lievrouw, eds., Transaction Publishers, New Brunswick, NJ. 1990. pp.125-181.
- Rakow, Lana F. (1988) "Women and the Telephone: The Gendering of a Communications Technology" in Kramarae, Cheris ( editor) *Technology and Women's Voices: Keeping in Touch*, Routledge & Kegan Paul, New York, p. 207-228.
- Rust, Roland T. and Oliver, Richard W (1994) "The Death of Advertising," *Journal of Advertising* 23 (4) (1994): 71-78.

- Stipp Horst (1998) "Should TV Marry PC?" *American Demographics* (July), 16-21.
- Swedlow, Tracy (2000) Interactive Enhanced Television: A Historical and Critical Perspective.  
URL: <http://www.itvt.com/etvwhitepaper.html>
- Venkat, R. and F. H. Sobey (1999) "Internet Advertising: Role of Involvement and Ad Characteristics" in R. R. Dholakia and S. Wikstrom (eds.) *Electronic Commerce: Behaviors of Suppliers, Producers, Intermediaries & Consumers*. Proceedings of COTIM99, RITIM: The University of Rhode Island, Kingston, R.I.
- Venkatesh, Alladi, Dholakia, Ruby Roy and Dholakia, Nikhilesh (1996) "New Visions of Information Technology and Postmodernism: Implications for Advertising and Marketing Communications" in W. Brenner and L. Kolbe (ed) *The Information Superhighway And Private Households: Case Studies Of Business Impacts*. Heidelberg, Germany: Physica.
- Williams, Aisha M. (2000) "Mobile Information Device helps Personalize Interactive Wireless Applications," *Information Week* (September 19, 2:38 pm) URL:  
<http://www.informationweek.com/story/IWK20000919S008>
- Williams, Frederick, Ronald E. Rice, and Everett M. Rogers (1988), *Research Methods and the New Media*, the Free Press, New York.