

## **Information Acceleration Effects on New Product Purchase Intention: The Case of Blu-Ray DVD recorders**

**David Waller, Paul Wang, University of Technology, Sydney  
Harmen Oppewal, Monash University  
Mark Morrison, Charles Sturt University**

### **Abstract**

The availability of relevant information is an important factor when customers are evaluating the purchase of a new technology. Information can be obtained from a range of sources, with varying levels of trustworthiness. This paper presents some findings regarding how different media are perceived and the effect of media exposure on purchase intent in the DVD recorder category. In an online survey regarding consumer preferences for DVD recorders respondents were exposed to different media with information either supporting the new Blu-ray or HDDVD disc technology. The paper presents results regarding the effects of this implementation of Information Acceleration (IA) on purchase intention and media trust. It is found that consumers exposed to positive information about Blu-Ray are significantly more inclined to consider purchasing a recorder with Blu-Ray technology.

### **Introduction**

For a consumer, the introduction of a new technology can be an interesting, yet daunting experience, which may also be financially risky. Therefore, before making the final purchase decision, a potential customer will generally undertake some search and evaluation activity to ensure that the right choice will be made. Past research has suggested that consumers progress through a series of decision states that begins with unawareness and eventually results in the decision to (or not) purchase the product (eg Lavidge and Steiner, 1961; Nicosia, 1966; Howard and Sheth, 1969; Engel, Blackwell and Kollat, 1978; Louviere, 1981; Kotler and Armstrong, 1991). Importantly these are states where potential customers flow from one state to another based on their information search and the company's marketing activities (Urban, Hulland and Weinberg, 1993). This suggests that in a marketplace, as a customer searches for information to assist in the purchase of a new product, obtaining the appropriate information is vital for progressing to the final purchase decision.

To investigate how consumers make these progressions, some marketers have provided information via some form of "Information Acceleration" (IA) technique, which is a virtual multi-media representation of information gathering techniques (Urban, *et al*, 1997; Cooke, 2003; Oppewal, *et al*, 2004). This paper reports on the findings of an experiment in which consumers are presented with the potential purchase of a DVD recorder with Blu-ray disc format (as opposed to its technological competitor HD-DVD) and are given the opportunity to progress through an IA technique with ten media platforms. The objectives of this paper are: (1) to determine how exposure to different types of information about DVD-recorders affects the intention to purchase a DVD recorder with Blu-ray, and (2) to discover if there is any difference in the media channels based on trustworthiness. The results indicate that there are significant relationships between choice and information channels, as well as information

channels and the level of trustworthiness, which raises important implications for new product marketers.

## **Background**

### **Information Search**

Information search has been defined as “the degree of attention, perception, and effort directed toward obtaining environmental data or information related to the specific purchase under consideration” (Beatty and Smith, 1987, 85). As it has been noted above, there is a strong link between a decision state and a consumer’s level of information about their potential purchase (Kardes, *et al*, 1993; Urban, Hauser and Roberts, 1990; Urban, Hulland and Weinberg, 1993; Kalyanam and Putler, 1997; Urban *et al*, 1997). Urban, Hauser and Roberts, (1990), in fact, include the level of a consumer’s information in its description of a decision state, stating that it is “a behavioural state that describes his/her (the consumer’s) level of information about his/her potential purchase”.

When contemplating a new purchase, consumers make a sequence of decisions, such as regarding what information to search for; where to search for information - which store or website to visit; what information they encounter, and from what source, e.g. TV commercial or word of mouth. For “high involvement” products, where there is an element of economic and/or social risk, this period will typically be longer than for “low involvement” products, varying between one day and up to several months, or longer (Schiffman and Kannuk, 1991). When considering the purchase of a new technology, as they move into a later stage of the process, consumers will increase their knowledge about the category, such as from the Internet and shop displays, and learn more about the technology in order to formulate their purchase preferences.

### **Information Acceleration**

IA is a virtual multi-media representation of information gathering techniques that is intended to accelerate customers from unawareness through the purchase decision making process rapidly towards the later decision states (Urban, *et al*, 1997; Cooke, 2003). Consumers are presented with the opportunity to access information from a number of media sources, and after each major information exposure, respondents are then required to choose between choice sets that are systematically varied in terms of strategic options (products, brands, etc.) and attributes (price, colour, product options). The central idea of IA is that if marketers can provide consumers with sufficient context and information to enable them to realistically experience a future purchase situation, then preferences, purchase intentions, and information usage data can be reliably collected and modelled to forecast sales, product design and marketing programs.

Just like a consumer in the marketplace is confronted with a number of media choice options, in an IA experiment respondents are also presented with some media choice for information gathering regarding their potential purchase. The most practical media choices for an IA experiment are usually the ones which are commonly used by the general public, such as newspaper articles, sales assistants, advertising, and the WWW. For example, in Urban, *et al* (1997) the information simulated with the IA were from: advertising (magazine, newspaper, and television advertising), interviews (unrehearsed video of actual consumers), articles (simulated consumer information and trade publications), and showroom. For this study the

IA information sources are videos of sales assistants, internet discussion forums, newspaper articles, and a general glossary of terms.

### **DVD Format Choice**

The new technology that is the focus of this study is DVD recorders, with a particular interest in the choice of a DVD with the new format Blu-ray, which is in direct competition with another format HD-DVD. In the area of home entertainment, DVDs have been an amazing success since they were introduced in 1990s and has all but replaced the Video Cassette Recorder (VCR) (Minett, 2004). Its diffusion into homes across the world has been incredible, with it claimed that sales of the first generation of DVDs displayed “the fastest growth ever for a consumer electronic product” (Anon, 2005). The first DVD player and discs were available in November 1996 in Japan. The DVD technology began to increase in popularity with DVD rentals topping VHS rentals in June 2003 and by 2005 many retailers announced plans to phase out the VHS format. Recent research on picture quality has seen Sony create the Blu-ray disc, while Toshiba’s next generation system has resulted in HD-DVD, both using blue laser technology and can store significantly more data than a standard DVD. The main differences between the formats are that they have different a surface layer, with Blu-ray being much thinner which means they cost more, however, they hold more data (Block, 2005). Therefore, similar to the battle between VHS and Betamax in the 1980s, two new incompatible formats are competing for adoption as the dominant design, but this time the preferred next generation optical standard for DVDs (Block 2005). The analysis in this study will concentrate on the results of an IA experiment on the choice of a DVD with a Blu-ray format.

### **Methodology**

To determine the effect of IA on the purchase intention for a DVD with Blu-ray format, the data was collected from a nation-wide on-line panel survey that resulted in 1283 responses. The survey included questions about DVDs and the knowledge of the new competing formats, as well as a choice experiment measuring DVD recorder preferences.

For the IA experiment the respondents were presented with a total of 10 information sources in a between-subjects design. The sources were selected to reflect various settings to obtain DVD information – sales assistant, internet discussion forums, and newspaper articles, as well as a general glossary of relevant terms. Specifically, sources 1 and 2 were videos of sales assistants promoting HD-DVD, sources 3 and 4 were videos of sales assistants promoting Blu-ray; source 5 was a general internet forum discussion, source 6 was an internet forum discussion favouring Blu-ray, source 7 was an internet forum discussion favouring HD-DVD, source 8 was a news article favouring HD-DVD in the newspaper *The Australian*, source 9 was a news article favouring Blu-ray in the newspaper *The Daily Telegraph*, and source 10 was a general glossary of relevant terms.

The respondents were also asked to indicate their opinions of the information sources based on a number of adjectives, including “trustworthiness”. It is believed that when deciding on the choice of media channels during an information search, it is important that the information source should not just be available, but the information should be trusted. Knowing the most credible and trustworthy sources will help marketers of new technological products in choosing the best media strategy to gain the confidence of potential customers. This paper

will only report on the results relating IA and their stated intention to purchase the new DVD Blu-ray format, and the perceived trustworthiness of the various media channels. Purchase intention was measured by asking whether the respondent expected to purchase a recorder with Blu-Ray within the next 12 months (yes or no).

## Results

As shown in Table 1, the overall binary logit model comparing Blu-ray purchase intention (whether to purchase a DVD with Blu-ray disc technology) across the 10 information channels is highly significant (Chi-square = 34.557,  $p < 0.001$ ). Looking at the individual t-tests for each of the information channels, respondents who were exposed to the two sales videos supporting Blu-ray were significantly more likely to purchase a DVD recorder with the Blu-ray feature ( $t_3 = 1.99$ ,  $p < 0.05$ ;  $t_4 = 3.27$ ,  $p < 0.01$ ). On the other hand, those who were assigned to the two sales videos in favour of HD-DVD were significantly less likely to purchase a Blu-ray DVD recorder ( $t_1 = -2.07$ ,  $p < 0.05$ ;  $t_2 = -2.36$ ,  $p < 0.05$ ). As expected, those respondents who read the Daily Telegraph newspaper article favouring Blu-ray were significantly more likely to purchase a Blu-ray DVD recorder ( $t_9 = 2.92$ ,  $p < 0.01$ ) and those who read the Internet discussion supporting HD-DVD were marginally more likely to purchase a Blu-ray DVD recorder ( $t = -1.69$ ,  $p < 0.10$ ). This result answers objective 1.

**Table 1: Binary Logit Model Result Linking  
Information Source and Blu-ray Purchase Intention**

ID	Chanel Description	coeff	s.e.	t	p
1	HD-DVD sales video 1	-0.451	0.218	-2.07	0.038
2	HD-DVD sales video 2	-0.512	0.217	-2.36	0.018
3	Blu-ray sales video 1	0.336	0.169	1.99	0.047
4	Blu-ray sales video 2	0.576	0.176	3.27	0.001
5	Internet discussion 1 general	0.015	0.197	0.07	0.941
6	Internet discussion 2 Blu-ray	0.148	0.188	0.79	0.432
7	Internet discussion 3 HD-DVD	-0.357	0.211	-1.69	0.092
8	News article 1 HD-DVD in Australian	-0.252	0.194	-1.30	0.193
9	News article 2 Blu-ray in Daily Telegraph	0.495	0.169	2.92	0.004
10	News 3 General glossary	0.003	0.197	0.01	0.990
	Constant	-0.968	0.065	-14.93	0.000
Log-likelihood: -731.181, Chi-square = 34.557, df=9, p=0.000					

In addition to purchase intention, respondents were asked to indicate on a 5-point rating scale how trustworthy the information they obtained from the channel that was randomly assigned to them, ranging from 1 “not at all trustworthy” to 5 “extremely trustworthy”. A one-way ANOVA was used to test the mean scores across the 10 information channels and results are summarised in Table 2. As shown, the overall ANOVA model is highly significant ( $F = 10.864$ ,  $p < 0.001$ ), and the post-hoc multiple comparisons using Tukey’s (1953) procedure suggest that there exist three distinctly different groups among the 10 information channels.

The sources perceived to be the most trustworthy included the news article supporting HD-DVD in the Australian newspaper and the neutral general glossary of DVD recorders. The Australian is a broadsheet newspaper which has coverage Australia-wide, while the glossary

was an unbiased dictionary of terms. They had the highest trustworthy scores among the three groups with a pooled average score of 2.962. The second group comprises the four sales videos plus the Daily Telegraph news article on Blu-ray. The Daily Telegraph is a tabloid newspaper primarily available in Sydney, while the videos presented sales assistants who present information but have a clear bias towards either HD-DVD or Blu-ray. Information channels in this group had medium average trustworthy scores among the three groups (their pooled average score was 2.771). The final group consists of the three Internet discussions, which had the lowest average trustworthy scores among the three groups (the pooled average score for this group was 2.367). These research findings answer objective 2.

**Table 2: One-Way ANOVA Result Comparing Trustworthy Mean Scores**

<b>ID</b>	<b>Channel Description</b>	<b>mean</b>	<b>s.d.</b>	<b>group</b>
8	News article 1 HD-DVD in Australian	2.936	0.821	1
10	News 3 General glossary	2.992	0.914	1
1	HD-DVD sales video 1	2.893	0.870	2
2	HD-DVD sales video 2	2.878	0.877	2
3	Blu-ray sales video 1	2.767	0.847	2
4	Blu-ray sales video 2	2.764	0.955	2
9	News article 2 Blu-ray in Daily Telegraph	2.576	0.901	2
5	Internet discussion 1 general	2.508	0.889	3
6	Internet discussion 2 Blu-ray	2.246	0.856	3
7	Internet discussion 3 HD-DVD	2.349	0.852	3
Note 1: ANOVA $F = 10.864$ , $df_1=9$ , $df_2=1290$ , $p\text{-value} = 0.000$				
Note 2: Each group means are significantly different from one another at 0.01 level.				

## Conclusion

This paper has reported the preliminary results of an experiment in which consumers are presented with the potential purchase of a DVD recorder with Blu-ray disc format and are given the opportunity to progress through an IA technique with ten media platforms. The analysis found that there were significant relationships between the information channels and the purchase intention of Blu-ray, in particular, media sources that were pro-Blu-ray were significantly more likely to purchase a DVD recorder with the Blu-ray feature, while media sources that were pro-HD-DVD were significantly less likely to purchase a DVD recorder with the Blu-ray feature. This result would be an encouraging sign for marketers of new technological products in showing an important statistical link between information and format purchase intention. Further, analysing the respondents' perceptions of the trustworthiness of the various media channels found that a glossary and article in The Australian was more trustworthy than sales assistants and an article in The Daily Telegraph, and particularly internet. It is, therefore, important for marketers to discover the specific media sources that potential customers use for information gathering and perceive to be highly trustworthy, and ensure that their product/brand is included.

From these findings it appears that some important issues have been raised for marketers of new products in relation to consumer information gathering and media sources. Further

research is recommended in this area to discover what media sources are used at different times in the decision making process, and the messages that are the most useful to the potential customer. Also it would be worthwhile to determine if there were any differences between various demographics and social groups. Additional refining of IA experiments can be very useful for market researchers to ensure realistic situations and reliable results. Finally, understanding the trustworthiness of various media formats can assist in more effective media selection. Therefore, by undertaking such research, new product marketers will be better able to satisfy the information needs of their potential customers, thereby being more effective in their overall promotional strategy.

## References

- Anon 2005. DVD Format Duel Worries Vendors IEE Electronic Systems Software, February/March, 6.
- Beatty, S.E., Smith, S.M., 1987. External Search Effort: An Investigation Across Several Product Categories. *Journal of Consumer Research* 14 (June):83-95.
- Block, R., 2005. Blu-ray vs HD DVD: State of the ~~Union~~ Division, *engaget.com*, 19 September, available from *www.engaget.com*.
- Cooke, L., 2003. Information Acceleration and Visual Trends in Print, Television, and Web News Sources, *Technical Communication Quarterly* 12 (2), 155-181.
- Engel, J.F., Kollat, D.T., Blackwell, R.D., 1978. *Consumer Behaviour*, 3rd. ed., The Dryden Press, Hinsdale, IL.
- Howard, J.A., Sheth, J.N., 1969. *The Theory of Buyer Behaviour*, John Wiley & Sons, Inc., New York.
- Kalyanam, K., Putler, D.S., 1997. Incorporating Demographic Variables in Brand Choice Models: An Indivisible Alternatives Framework, *Marketing Science* 16 (2): 166-181.
- Kardes, F.R., Kalyanaram, G., Chandrashekar, M., Dornoff, R.J., 1993. Brand Retrieval, Consideration Set Composition, Consumer Choice, and the Pioneering Advantage. *Journal of Consumer Research* 20 (June): 62-75.
- Kotler, P., Armstrong, G., 1991. *Principles of Marketing*, 5<sup>th</sup> edition, Prentice Hall, Englewood Cliffs, NJ.
- Lavidge, R.J., Steiner, G.A., 1961. A Model for Predictive Measurements of Advertising Effectiveness, *Journal of Marketing*, October, 59-62.
- Louviere, J.J., 1981. A Conceptual and Analytical Framework for the Analysis of Spatial and Travel Choices. *Economic Geography* 57 (4), 304-315.
- Minett, Peter 2004. Getting Up To Speed with DVD recorders. *IEE Electronic Systems and Software* June/July: 19-23.
- 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*, Victoria University of Wellington, Wellington, CD Rom.
- Schiffman, L.G., Kannuk, L.L., 1991. *Consumer Behaviour*. 4<sup>th</sup> edition., Prentice Hall, Englewood Cliffs, NJ.

Tukey, J. W. 1953. The Problem of Multiple Comparisons, Unpublished Notes, Princeton University.

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

Urban, G.L. Hauser, J.R., Qualls, W.J., Weinberg, B.D., Bohlmann, J.D., Chicos, R.A., 1997. Information Acceleration: Validation and Lessons from the Field. *Journal of Marketing Research*, 34 (February), 143-153.

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.