

## The Adoption of New, More Efficient Technologies and Consumer Behavior: The Case of Home Video Entertainment in Mexico

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**Abstract--**In recent years, there has been a growing pressure on consumers to adopt energy-efficient electronic devices as a way to reduce CO2 emissions. Although Blu-ray high definition disc players (BD) are viewed as better electronic devices than the standard DVD players, they have not yet massively pervaded. That is because the penetration of this new, more efficient technology is determined by factors such as the cost-benefit of BD players as well as the advantages consumers still attribute to the incumbent technology. This paper analyzes the barriers that consumers face to adopt the newer DVD technology in the case of Mexico. Drawing on a survey on Mexican users of DVD technology, it was possible to identify the main factors that deter users from buying BD players. According to the empirical analysis, the chief deterrents are the higher price of Blu-ray combos (players and discs), the lack of information regarding this technology, and, quite surprisingly, the confidence users said to have with the former technology. These results might suggest that Mexico's demand for standard DVDs will continue unabated in years to come in spite of the better quality attributes and energy-efficient features of the Blu-ray technology.

### I. INTRODUCTION

Due to environmental concerns and global warming, there has been an increased social pressure for consumers to adopt energy-efficient electronic devices. As, for example, the campaign organized for the Non-governmental organization Greenpeace called "Guide to Greener Electronics," which aims at informing shoppers on environmental-friendly electronic products and their manufacturing companies<sup>1</sup>.

The objective is to make consumers aware of the environmental costs of acquiring obsolete, more power-consuming household appliances. In particular, the United States economy has the potential to reduce annual non-transportation energy consumption by roughly 23 percent by 2020. Although these savings can come from a variety of sources, one of the most important is the adoption of more efficient electronic devices [12]. Granade and colleagues point out that the average American household spent US\$330 on energy for electrical devices and small appliances in 2008, with the expenditure growing at an annual rate of 2%. Besides, TVs, Digital Versatile Disc (DVD) players and PCs made up 32% of that bill; and by 2020 there will be 2.5 billion devices consuming power in U.S. residential homes [12: 46]. It is not surprising, therefore, that "greener"

electronics, and especially energy-efficient products, are receiving increasing interest amongst consumers around the world because greener devices can help them to reduce electricity bills<sup>2</sup>.

A prominent place in this trend is occupied by the home video entertainment technology, in particular by high definition DVD technology, the so-called "Blu-ray" disc (BD)<sup>3</sup>. Launched in 2002 as a response for waning revenues in the standard-definition DVD market, BD was announced as the next generation, high-quality video technology, purporting to offer enhanced storage capacity due to finer laser beam readers [4], [26]. Given its higher capacity (six times higher resolution than DVD), BD offers superior sound quality, new navigation interfaces, games that are integrated in movies, enhanced interactivity and options to enrich content already bought with new live events and to get access to additional bonus material via the Internet [28]. Besides, BD players are reviewed as more environmental-friendly devices than the standard DVD player by receiving the so-called greentech label.<sup>4</sup>

Nonetheless, the penetration of BD technology has not yet been as rapid as forecasted. For example, according to a report issued in 2006, Kagan Research expected that high definition DVDs (including BD) made up to 13% of the American home entertainment market by 2009<sup>5</sup>, but by mid-2010 BD had only 11.1% of that market [28]. A similar situation exists in Europe where, by mid-2010, the consulting firm DVD Intelligence reported that BD sales were around a tenth of the total European home entertainment market (valued at 1.5 billion Euros), but only of 5.9% in volume (i.e., physical discs)<sup>6</sup>.

In Mexico, BD penetration has been ever shallower. Plagued by years of meager economic growth, the Mexican consumer electronics market has exhibited modest advances since 2006. Moreover, as a result of the global economic

<sup>1</sup> See the report "Guide to Greener Electronics," which ranks 18 electronics manufacturers as regards their commitment toward the use of environmental-friendly inputs in their products. This report is available at: <http://www.greenpeace.org/international/Global/international/publications/toxics/2010/version16/Ranking%20tables%20Oct%202010-All%20companies.pdf> [Retrieved on February 26, 2011].

<sup>2</sup> See, for example, the report by the consulting firm Euromonitor called "Consumer Electronics in Hong Kong, China," at [http://www.euromonitor.com/Consumer\\_Electronics\\_In\\_Hong\\_Kong\\_China](http://www.euromonitor.com/Consumer_Electronics_In_Hong_Kong_China)

<sup>3</sup> Blu-ray is an optical storage technology designed to meet the demands and expectations of high definition movie distribution and personal video recording. It employs a 405 nm (blue) wavelength laser to read and write information on high density discs [28].

<sup>4</sup> For further details, see "The Good Clean Tech Guide" at [http://www.goodcleantech.com/2009/01/ho\\_we\\_test\\_bluray\\_disc\\_players.ph](http://www.goodcleantech.com/2009/01/ho_we_test_bluray_disc_players.ph) [Retrieved on February 26, 2011].

<sup>5</sup> Data reported by the news service Dealerscope under the heading "Dealer Data: Firm Bullish on High-Def DVD" on October 10, 2006 [available at <http://www.dealerscope.com>].

<sup>6</sup> Data reported by the consultancy firm DVD Intelligence under the heading "Sales of Blu-ray discs doubled in Q1 2010, topping 150 million Euros" at <http://www.dvd-intelligence.com/display-article.php?article=904>