

Evaluation of Interactive Digital TV Commerce Using the AHP Approach

Koong Lin

Tainan National University of the Arts, Taiwan

Chad Lin

Curtin University of Technology, Australia

Chyi-Lin Shen

Hua Yuan Management Services Co. Ltd., Taiwan

INTRODUCTION

The popularity of interactive digital television (IDTV) has been increasing rapidly over the last few years and is likely to be the growth star of the future. According to Forrester Research, more than 10% of Europeans are now using interactive digital television (IDTV) services (Jennings, 2004). Indeed, the introduction of IDTV in the diffusion of television has brought about many benefits to the customers (e.g., more TV channels) (Buhalis & Licata, 2002). The proliferation of IDTV has also given customers easier access to products and services. Nevertheless, according to Pagani (2003), this has a profound effect on the market outlook for the existing TV operators. Although IDTV contributes many benefits to the quality and the transmission of the TV channels for the customers, it has also resulted in fierce market competition and decreased profit margins for the TV industry as a whole. Therefore, the industry needs to look for new ways to utilize the technology to be competitive.

However, organizations often encounter challenges and problems when implementing new information technology (IT) (Lin, Pervan, & McDermid, 2005). For instance, organizations are likely to face uncertainties when assessing the new adopted IT (Lin & Pervan, 2003) such as IDTV. Moreover, very few studies have carried out proper examination and evaluation of how the TV industry as a whole conducts its business using IDTV (i.e., IDTV commerce). Thus, the objective of this short article is to establish a decision analysis mechanism that can assist the TV operators in adopt-

ing IDTV as their commerce platform. A survey was employed to investigate and identify the key issues for adopting IDTV commerce by TV operators. The analytic hierarchy process (AHP) methodology was used to analyze the IDTV adoption decision processes of these TV operators. The AHP methodology was developed by Saaty (1980) to reflect the way people actually think, and it continues to be the most highly regarded and widely used decision-making theory (Lin et al., 2005). One contribution of the short article is that our results indicate that the three most important adoption drivers for implementation IDTV as a commerce platform are: (1) the operational capability for the IDTV services; (2) the innovation and strategy execution capabilities; and (3) the level of maturity in technological development. Finally, most respondents indicate that the adoption of IDTV commerce should be fully operated and managed in-house, rather than outsourced (partial or total outsourcing).

BACKGROUND

Digital Television

Digital television (DTV) is a brand new technology for receiving and sending digital TV signals, which is different from the traditional analog TV signals (Pagani, 2003). DTV is television signals sent digitally rather than in the analog form used when TV was introduced. Analog TV is available in only one quality whereas DTV digitalizes the processes of program produc-

tion, image processing, encoding, signal emitting, and transmission (FCC, 2001). DTV comes in several levels of picture quality: high definition television (HDTV), enhanced definition television (EDTV), and standard definition television (SDTV). HDTV is DTV at its finest, and you can enjoy a true home theater experience. EDTV is a step up from basic television, while SDTV is the basic display. In terms of DTV screen types, the primary options are: (a) cathode ray tube (CRT) screens—traditional color television screens updated for digital; (b) rear projection TVs—rear projection TVs can create brilliant, wide angle pictures on ever-larger screens; (c) LCD screens—are very thin and produce extremely clear pictures, but are currently expensive and limited in size; and (d) plasma screens—create a bright, clear picture up to enormous sizes while remaining very thin.

DTV is available via three main delivery methods: (1) cable—this offers subscriptions to multiple channels of DTV or HDTV programming, which varies depending on the provider; (2) satellite—this offers subscriptions to multiple channels of DTV or HDTV programming, which varies depending on the provider; (3) over air—this allows you to view DTV signals sent by local broadcasters only, and there are no subscription fees. In addition, there are two basic components of DTV: a television monitor and a tuner. A tuner (also called a receiver or set-top box (STB)) takes the television signal and communicates it to the television monitor. Tuners need to be connected to a TV monitor in order to view the programs contained in the signals they receive.

The successful application of DTV was due to two main factors: (1) the development of compression techniques (e.g., MPEG2 and MPEG4 standards); and (2) the agreement of universally accepted standards (Rangone & Turconi, 2003). There are three global DTV standards—ATSC used in America, DVB used in Europe, and ISDB used in Japan. There are four categories of digital TV: CATV via Cable modem, MOD via ADSL, mobile TV via smart phones, and IPTV via any IP-based network environments (Liu, 2006).

In recent years, the deployment of interactive services on DTV has gaining momentum, and it has the potential to reach a similar level of access as the Internet (McGrail & Roberts, 2005; Thompson, Williams, Nicholas, & Huntington, 2002). Interactive TV is a DTV extended technology (usually abbreviated to IDTV). IDTV focuses on the interactive functions

and services, including user-friendly interfaces, video on demand (VOD), electronic program guide (EPG), personal video recorder (PVR), and so forth (Chang, 2001). It refers to television displayed using a digital signal delivered by a range of media, including cable, satellite, and terrestrial (by aerial). Consumer interactions are provided by a remote control, which enables viewers to select different viewing options through signals sent to a set top box (STB) (Chaffey, 2002). IDTV can be used in areas such as health information (e.g., by allowing consumers to access health information at home 24 hours a day, 7 days a week) (Thompson et al., 2002) and tourism (e.g., by allowing consumers to directly access their reservation systems) (Buhalis & Licata, 2002).

IDTV Commerce

In general, all the transactional behaviors via TV can be called TV commerce. The traditional TV shopping is the most popular form of TV commerce. TV commerce allows viewers access to a variety of goods and services through their TV. TV has been perceived as a more trusted medium than the Internet because viewers are familiar with it and feel that TV is still subject to government regulation (Digisoft.tv, 2004). TV commerce comprises the following submarkets: (1) TV shopping; (2) direct response TV; (3) travel shopping; and (4) interactive TV (IDTV) applications.

Like other electronic commerce mediums, IDTV providers can offer ways to exchange money electronically, which facilitates TV commerce. IDTV commerce is a specific kind of TV commerce using TV sets and other related equipments with interactive services (e.g., banking, shopping, betting and gambling, auctions). According to a survey by Gallup Research, 42% of respondents over the age of 50 would be interested in purchasing items via IDTV, although they may be uncomfortable using Internet (Digisoft.tv, 2004). It is also attractive to viewers, as they do not need to purchase any additional equipment (besides the costs of STB) or learn a new technology. STB is a critical component for users to receive digital television signals on traditional TV sets. STB provides the users with capabilities for implementing interactive television applications (Rangone & Turconi, 2003). Using STB, IDTV commerce is no longer a one-way transmission media but a two-way virtual transaction channel (Lin & Liu, 2006; Lin, Kaun, & Chiu, 2006).

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