

OTT (Internet TV) Development

Smartphones and tablets have gained tremendous popularity, as evidenced by their rapid growth (100M's per annum) and mobile viewing behavior. Mobility is driving OTT (Over-The-Top delivery, bypassing telcos' control as in the "wall-garden" of IPTV). There are various definitions of OTT, ranging from broad to narrow (in USA).

In this paper OTT refers to Internet TV delivered to smart-TV, smart-phones, tablets or PC on unmanaged broadband networks (not telco-managed IPTV networks). Apart from pure-play-OTT operators (eg Netflix, Hulu), OTA (Over-The-Air) terrestrial TV broadcasters and IPTV operators can deploy OTT for additional business, offering mobile viewing as well as a multi-screen/ "TV Anywhere" consumer-experience. ("TV Everywhere" has a specific meaning in USA.) This paper examines the driving forces behind OTT development and compares pure-play-OTT with OTA/ IPTV.

The Driving Forces

Please refer to Ref. ^[1] for an outline of the RPMO model for analyzing driving-force factors.

Regulatory (R)

Content delivered on OTT is less regulated than that on OTA TV channels and the regulatory aspects are still evolving ^[2]. Barrier-to-entry could be lower, in terms of regulatory control. However, there could be cross-border content-rights limitations curtailing the expansion of pure-play-OTT. In mainland China, seven OTT licenses were issued for content business, CNTV (China Network TV) being the major operator, but the OTT value chain has not been streamlined by further regulation. OTA, IPTV and OTT markets are oligopolies, due to the high content costs. OTT is subject to considerable exposure to piracy, for cross-border program streaming. The regulatory framework for content rights protection is crucial for OTT business success and piracy concerns often deter foreign and local OTT investments.

Pricing (P)

Pure-play-OTT operators rely normally on subscriptions eg for Netflix and Hulu, but OTA broadcasters could rely on on-line advertisements for additional ROI (Return on Investment). For IPTV operators, OTT offering for mobile services could be bundled in the broadband/ IPTV subscription plans; advertisements can also be deployed. For delivery,

pure-play-OTT operators with large geographical coverage often rely on CDN (Content Delivery Networks, with caching of content at local nodes eg Netflix Open Connect), for quality of service (fast page-loads, smooth streaming, etc.), but CDN deployment increases operating costs.

Content-related costs remains to be a critical market competition issue, as exclusive and attractive content is the trump card in any media business. Whether a pure-play-OTT player can secure such content depends on its relationship with the content providers, bargaining power and deep pocket. New video compression and content-streaming technologies can, over time, reduce operating costs for all OTT players. Unlike IPTV where a telco-provided STB (Set-Top Box) is required, OTT often deploy apps (for desktop and mobile), this being a business advantage.

Consumers want maximum value for money and generally prefer flat-fee basic services. Pure-play-OTT players, as content aggregators offering a wide range of content and competing in oligopoly where competition is fierce and price-sensitive, normally keep their subscription fees low and competitive, for continued growth.

Marketing (M)

Whilst economics is the backbone of technological development, pricing and marketing are two crucial driving forces. Even with affordable pricing, intensive marketing is required, since viewers may be unfamiliar with OTT offerings. For OTA and IPTV operators, OTT offerings are readily promoted via their existing delivery platforms or marketing campaigns. Pure-play-OTT operators can partner with content providers and telcos in marketing their services. Marketing is more critical for pure-play-OTT operators as they must build a very large subscription base to sustain business, since the basic fee is normally low. On the other hand, incumbent OTA and IPTV operators are much less reliant on their OTT businesses for survival.

Content (O1)

The adage "Content is King" holds for OTT/ OTA/ IPTV. Pure-play-OTT and IPTV operators are content aggregators, offering numerous channels (100's), but OTA, even with efficient video compression, is disadvantaged as it can provide only a few program channels within an allocated RF channel (8MHz, in Hong Kong). Market competition depends on both the range and quality of content. Local

1. Yip, J., Emerging Media Technologies, Planning and Techno-economics, ABU Tech. Review, Jan.-March, 2013, pp. 3-7

2. Valcke, P., etc., Convergence between Television and the Internet: Challenges for Content Regulation, http://rthk.hk/mediadigest/20120514_76_122870.html

3. http://www.mpfinance.com/htm/finance/20130621/News/ec_ece1.htm



content, eg local news, variety shows, being a strong product differentiator, could present a major challenge to a pure-play-OTT operator since good local content is expensive to produce. In mainland China, strategic cooperation is being forged between content providers and interested parties for OTT development, eg Hunan TV and Huawei. Another issue is content protection, via CA (Conditional Access), DRM (Digital Rights Management) and water-marking technologies, as piracy can easily ruin an OTT business. Furthermore, OTT/OTA and IPTV operators offering mobile services need to customize their content for the various mobile platforms and to integrate social media into mobile content, for cross-promotion and for reinforcing viewer loyalty.

Consumer Habits (O2)

OTA is still the most efficient TV transmission method, as there is zero marginal cost in serving additional viewers (within the coverage area), in contrast to IPTV and OTT where capacity sharing (in Mbps, or Megabits/s) is required. However, there has been a rapid escalation in internet TV viewing (fixed and mobile). In Hong Kong, more time has been spent on the internet than on the TV set^[3]. Mobile viewing behavior differs from that of traditional TV viewing; consumer behavior has been a primary focus for maximizing ROI. Consumers in the multi-screen era want a wider range of content and personalized services hence operators customize their products for their viewers, eg links to social media (Facebook, Twitter, etc.) and custom apps/ players (eg BBC's iPlayer). Viewing time has been found to be increased by social media, eg recommendations. Many such consumer-behavior studies have been conducted by market researchers eg Cross Platform Reports by Nielsen.

Service Features (O3)

OTT, on the world-wide internet, is more powerful than OTA or IPTV in terms of its ability to offer an immense cross-border reach. OTT, relying on apps, can offer SD/ HD video, VOD, social media, VoIP, etc. on multiple platforms and provides a wide range of content as in IPTV. The service flexibility of OTT is thus high.

OTT can be evaluated as a technology (or, technology + services), if interfacing electronic devices (eg Apple TV box, Roku streaming-TV box, Chromecast dongle) are to be treated as a key issue. In mainland China, non-standardization of

OTT STBs has led to some market confusion, retarding OTT growth.

Quality (O4)

Outdoor viewing is subject to mobile reception problems such as signal interruption. New radio access technologies eg HSPA+, LTE-Advanced (4G), etc. together with H.264/ H.265 (HEVC) compression and HLS/ MPEG-DASH adaptive-streaming can improve video performance and quality. However there remains the reception reliability problem caused by terrain and building blockage of radio-frequency signals; this is quite serious in Hong Kong. WiFi systems eg 802.11 (a/b/g/n/ac) can help alleviating some mobile reception problems, both indoors and outdoors. OTT also introduces a time delay in transmitting high-quality real-time video, a technical issue to be addressed^[4], whereas the transmission quality of service (QoS) can be more readily controlled in OTA or in IPTV (deploying a multicast-enabled network).

Comparison

Pure-play-OTT/ OTA/ IPTV may be quantitatively compared, by means of the cross-platform comparison methodology outlined in^[1]. A value (0 to 5, for no-go to excellent) could be assigned to the comparative weakness/ strength under each of the driving force factors. A geometric mean is then derived to yield an overall comparative assessment score, for the economy under consideration.

Summary

OTT is advancing rapidly, fostered by advances in radio access networking and by the explosive growth of mobile devices, as viewers enjoy mobile viewing, personalized services and social media. Pure-play OTT players are expanding and OTT is gaining ground in mobile TV viewing as in USA^[5] although OTT is currently not a substitute for traditional TV^[6]. Meanwhile, OTA TV broadcasters can leverage OTT to improve viewer-reach as well as viewer-loyalty. This paper has outlined the OTT growth factors and the issues. Local and premium content remains to be a key service differentiator; Content is still King.

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4. Schwarz, B., OTT delivery, May 2012, <http://fr.slideshare.net/zaggyfr/ott-white-paper>

5. MaMahon, F., Netflix and Hulu Take Over Mobile TV, Broadcast Engineering, June 4, 2013

6. <http://advanced-television.com/2013/07/29/tivo-research-netflix-not-cannibalising-traditional-tv-viewing/>