

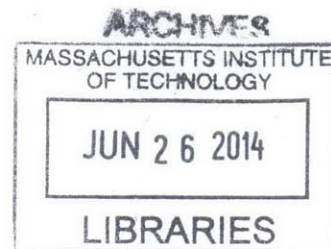
The Evolving Value Chain in the Television Industry

Changes in Pay TV Delivery and Its Implications for the Future

by

Deepak Mohan

B. Eng., Electronics and Communication
Nanyang Technological University (2002)



Submitted to the System Design and Management Program in Partial Fulfillment
of the Requirements for the Degree of

Master of Science in Engineering and Management

at the

Massachusetts Institute of Technology

January 2014

[February 2014]

© 2014 Deepak Mohan

All Rights Reserved

The author hereby grants to MIT permission to reproduce and to distribute publicly
paper and electronic copies of this thesis document in whole or in part in any
medium now known or hereafter created.

Signature of Author _____ **Signature redacted** _____
Deepak Mohan
System Design and Management Program

Certified by_ **Signature redacted** _____
Michael A M Davies, Thesis Supervisor
Senior Lecturer, Engineering Systems Division

Accepted by _____ **Signature redacted** _____
Patrick Hale, Director
System Design and Management Program

Abstract

This report studies the television industry in the US, and the changes that have taken place in the industry in the last decade. Specifically, it looks at episodic TV content delivery and consumption – excluding movies, sports and live programming.

The study uses 2005 as a reference point, marking the end of the pre-online video era. The industry followed a “content push” model, with channels programming the content for viewers based on their understanding of viewership, timings and preferences. The study shows that the large cable TV operators enjoyed the maximum value capture in the industry. This business had a high barrier for entry due to the expensive dedicated video delivery infrastructure, and this barrier prevented new entrants into the field.

Following this, a study of the current state of the TV industry is done. Online video delivery has removed the high barrier for entry, and new entrants providing Internet Protocol Television (IPTV) and Over The Top (OTT) video have entered the field. Netflix, which provides OTT video, has more subscribers than any other pay TV provider. In parallel, video consumption has become more individualized and pull-based – largely due to growth of mobile consumption devices such as smartphones and tablets.

Based on the study, the major changes and the underlying drivers of these changes are identified. Analyzing these drivers further, the following implications and opportunities are presented.

- i. Growth of “Over the Content” (OTC) services to connect people better with on-demand content
- ii. Growth of new measurement technologies for online video consumption
- iii. Continued pressure against bundling, resulting in more atomized content offerings
- iv. Upward integration in terms of industry activities, by the delivery companies
- v. Potential downward OTT offerings by the major networks
- vi. Risk of avalanche decline in traditional cable subscribers

Acknowledgments

The thesis research has provided a good understanding of the US television industry. Given this is a field that I am deeply interested in, I am thankful to have had the opportunity to work on this topic.

Firstly, I would like to thank Professor Michael Davies, for his guidance and support – and for the references, exposures and insights regarding the industry that he provided. I would also like to thank Professor Pat Hale and the SDM staff - both for the excellent facilities and infrastructure support; and for the thesis seminar through which I got introduced to Professor Davies.

Another group of people I would like to thank, are my study group and friends at SDM. They have been supportive, encouraging and inspiring, and made the effort and the time here thoroughly enjoyable.

Last but not the least, I'd like to thank my family, who have supported my decision to pursue the SDM program on campus. They have done immensely more than their fair share over the past year to help me, and I would not have been able to do it without them.

Table of Contents

ABSTRACT	2
ACKNOWLEDGMENTS	3
TABLE OF CONTENTS	4
LIST OF FIGURES	5
LIST OF TABLES	6
MOTIVATION	7
1. INTRODUCTION – TECHNOLOGY AND THE CONTENT INDUSTRY	8
1.1 THE BEGINNING OF THE END FOR TRADITIONAL TV?.....	9
1.2 FOCUS OF THE THESIS – US TV CONTENT INDUSTRY	11
1.3 APPROACH AND ORGANIZATION.....	11
2. REVIEW OF THEORETICAL FRAMEWORKS	13
2.1 DOMINANT DESIGNS AND TECHNOLOGY S CURVES.....	13
2.2 PORTER’S FIVE FORCES INDUSTRY ANALYSIS.....	15
2.3 VALUE CHAIN, VALUE CREATION AND VALUE CAPTURE	17
3. UNDERSTANDING THE US TV INDUSTRY, AND A SNAPSHOT OF 2005	19
3.1 THE VALUE CHAIN IN TV CONTENT DELIVERY – CREATION, AGGREGATION AND DELIVERY.....	20
3.2 INDUSTRY REVENUE IN 2005	24
3.3 MAJOR PLAYERS IN AGGREGATION AND DELIVERY	25
3.4 VALUE CAPTURE ANALYSIS – TOP PAY TV DELIVERERS CAPTURES MAXIMUM VALUE	27
4. THE TV CONTENT INDUSTRY IN 2013 (THE PRESENT)	31
4.1 A RE-LOOK AT THE TV CONTENT INDUSTRY – NEW ENTRANTS IN THE VALUE CHAIN	31
4.2 INDUSTRY REVENUE HAS GROWN	33
4.3 REVIEW OF MAJOR PLAYERS IN THE VALUE CHAIN.....	34
4.4 VALUE CAPTURE ANALYSIS – REVIEW OF PAY TV DELIVERY SEGMENT.....	36
4.5 OBSERVATION OF CHANGES BETWEEN 2005 AND PRESENT.....	38
5. ANALYSIS OF UNDERLYING DRIVERS	39
5.1 MATURITY AND GROWTH OF OTT VIDEO DELIVERY	39
5.2 MOBILE VIDEO CONSUMPTION DEVICES – SMARTPHONES AND TABLETS.....	48
5.3 NEW CONSUMPTION PATTERNS – DE-LINEARIZATION OF CONTENT AND CORD NEVERS.....	52
6. IMPLICATIONS AND OPPORTUNITIES FOR THE FUTURE	56
6.1 GROWTH OF “OVER THE CONTENT” (OTC) SERVICES – DRIVEN BY DE-LINEARIZATION	56
6.2 NEW MEASUREMENT TECHNOLOGIES FOR OTT VIDEO VIEWERSHIP	59
6.3 ATOMIZATION AND PRESSURE AGAINST BUNDLING OF CONTENT	61
6.4 UPWARD INTEGRATION BY DELIVERY PROVIDERS – EROSION OF MAJOR’S INFLUENCE.....	62
6.5 POTENTIAL DOWNWARD OFFERINGS BY RIGHTS OWNERS – BYPASSING OTT PROVIDER.....	63
6.6 RISK OF AVALANCHE DECLINE OF TRADITIONAL PAY TV SUBSCRIBERS, PARTICULARLY CABLE.....	64
6.7 FACTOR TO MONITOR – NET NEUTRALITY RULES.....	65
7. CONCLUSIONS	68
REFERENCES	70

List of Figures

Figure 1.1: Drop in primetime ratings, 2007 – 2011 (Source: Business Insider)	9
Figure 1.2: Y-on-Y monthly TV viewership, 2011 – 2012 (Source: Business Insider)	10
Figure 1.3: Quarterly additions of new Pay TV subscribers (Source: Business Insider)	10
Figure 2.1: Technology Adoption along Life Cycle (Source: Renew Economy)	14
Figure 2.2: Porter’s Five Forces (Source: Harvard Business Review)	15
Figure 3.1: US TV Industry Value Chain in 2005	20
Figure 3.3: ARPU, Revenue and Subscriber Base for Pay TV Delivery Players	28
Figure 3.4: Porter’s analysis of the pay TV delivery business as an industry	29
Figure 4.1: New Entrants in the US Content Viewing Value Chain	31
Figure 4.2: Top traditional MVPD providers in 2012 (by ending subscriber base)	35
Figure 4.3: Top traditional OTT providers in 2012 (by ending subscriber base)	35
Figure 4.4: Revenue flows in the Pay TV market in 2012(* Estimates)	36
Figure 5.1: Underlying Macro Trends Affecting TV Industry	39
Figure 5.2: Company entry in Internet video streaming solutions	41
Figure 5.3: Current Range of Pay TV Fees, Showing Lower Price of OTT	43
Figure 5.4: Subscriptions across Pay TV Delivery Services	45
Figure 5.5: Q3 2013 Change in Pay TV subscriptions	45
Figure 5.6: Comparison of Online video and Traditional TV ad spending	46
Figure 5.7: Increase in non-telephony mobile use cases (Source: Technology Review)	48
Figure 5.8: Device usage and online video traffic (Source: Yahoo Insights, comScore)	49
Figure 5.9: Mobile Internet adoption (Source: Morgan Stanley Research)	50
Figure 5.10: Popular Activities on Smartphones, 2012 (Source: Flurry Analytics)	50
Figure 5.11: Detailed Analysis of Growth in Traditional TV and Mobile Video	51
Figure 5.12: Increasing growth in ARPU for video (Source: nScreenMedia)	54
Figure 6.1: Potential changes in the TV Industry in the Near Future	56
Figure 6.2: Content Discovery Services Company Entry Diagram	58
Figure 6.3: Online video growth Outpaces Ad Spend growth (Source: GigaOm]	60
Figure 6.4 Online video growth outpaces Ad spend growth (Source: Flurry Analytics)	60
Figure 6.5: Viewer preference for non-linear content (Source: Business Insider)	61
Figure 6.6: Quarterly change in Pay TV subscriptions (Source: Wall Street Journal)	65
Figure 6.7: Video as a Portion of US Internet Traffic, Sept 2013 (Source: Statista)	66

List of Tables

Table 3.1: The Majors- A Simplified Overview	23
Table 3.2: US TV Industry revenue in 2005 (Billion US\$)	24
Table 3.3: Top TV networks in 2005 (Source: Broadcasting & Cable Ranking).....	25
Table 3.4: Top MVPD providers in 2005 (by ending subscriber base).....	26
Table 3.5: Revenue flows in the Pay TV market in 2005 (\$ Billions).....	27
Table 3.6: Revenue flows in commercial broadcast TV market in 2005 (\$ Billions).....	27
Table 3.7: Revenue, subscriber bases and ARPU of Major Players in Pay TV delivery	28
Table 4.1: US TV Industry Revenue in 2012 (\$ Billions).....	33
Table 4.2: Top Broadcast and Cable networks in 2011	34
Table 4.3: ARPU, Revenue and Subscribers for deliverers in 2012.....	37
Table 5.1: Change in Minutes per month viewed on mobile and traditional TV	51

Motivation

I am interested in emerging technologies and businesses around digital media. My recent business development work for Vobile, which was a Silicon Valley startup offering digital video related solutions, provided a good insight into this industry and the changes affecting the traditional media business. It also highlighted how new entrants in the space were able to make fast strides in the field of digital media, while incumbents seemed slower to leverage their existing advantages to do the same.

The industry is undergoing a rapid change, with distribution of power from the traditional power sources and creation of power around new areas. These changes have been enabled by the recent jumps in connectivity and device technology – mobile Internet and mobile personal video viewers (smartphones and tablets). These brought closer two industries – Telco and Video Content. These also introduced several new players in the field – Amazon, Hulu, Netflix, YouTube etc. I would like to understand the drivers that have enabled these changes, and the continued changes that these could introduce to this industry.

My intent is to continue learning about the workings this field through this research thesis, and thus continue building my capabilities and understanding about the digital video value chain. This is the area that I wish to work on post graduation, and the thesis experience would help strengthen my knowledge foundation for this direction.

1. Introduction – Technology and the Content Industry

In the last 15 years, the entertainment content industry has undergone an overhaul. New entrants have become top players, displacing decades long leadership by incumbents. The biggest causes of this change are the Internet and the growing popularity of digital technologies. The following is a brief description of how these changes have impacted two major content industries – text and music.

In 1995, when Amazon was launched, the two largest book retailers in the US were Borders and Barnes & Noble. In 2000, cumulatively they still had over thrice the sales that Amazon had. By 2007, Amazon emerged as the world's single largest book retailer. Today Amazon continues to be the leader in this market, and nearly a quarter of all book sales are e-books.

The MP3 format started getting popular in the late 90s, and Apple iTunes was launched in 2001. As late as 2005, the big four of the music industry (UMG, Sony, EMI and Warner) represented 70% of all retail music sales. Since then, mass proliferation of MP3 format and MP3 players, as well as the establishment of a framework to buy online music, have encouraged people to switch from physical to digital medium. Today, iTunes is the world's single largest retailer of music.

In both these industries, new entries in the value chain have significantly shifted the bargaining power within the value chain – rendering the incumbents substantially less powerful in the industry. The TV Industry, however, has not so far seen such a drastic inversion of major players. The major TV companies continue to be dominant forces in the industry, although several new players have entered in the last decade.

This thesis studies the US TV industry, to understand the changes over the past decade, and the implications that these have for the future. Specifically, the thesis examines the pay TV delivery business, the major players of which enjoyed the highest bargaining power and value capture during the pre-online video era.

1.1 The beginning of the end for traditional TV?

The business insider article from November 2013, titled “TV Is Dying, And Here Are The Stats That Prove It”, paints a bleak picture for the future of the traditional TV Industry ^[1]. The article highlights that 2013 marked the worst 12-month stretch ever for the TV industry, in terms of viewership and subscriber loss.

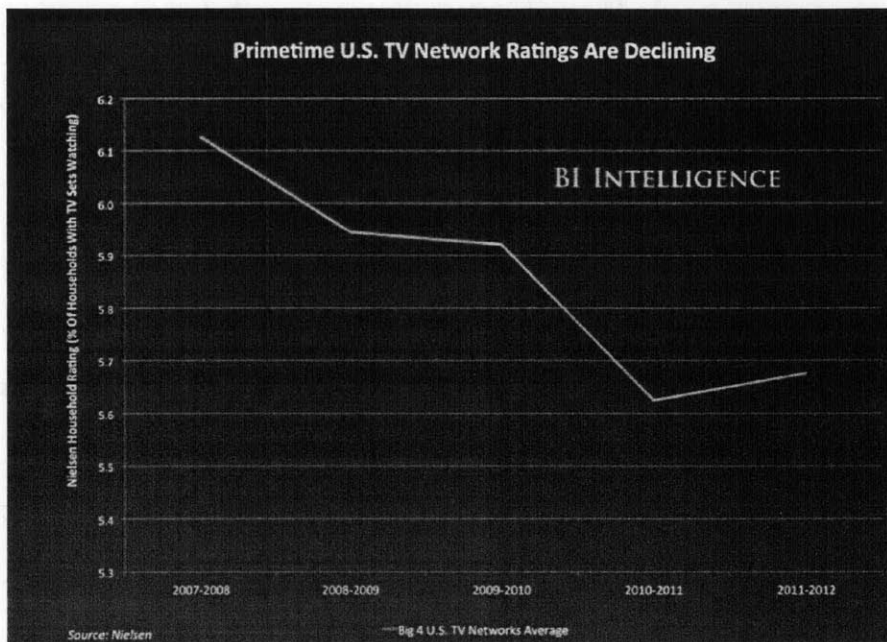


Figure 1.1: Drop in primetime ratings, 2007 – 2011 (Source: Business Insider)

As figure 1.1 shows shows that primetime viewership for both cable and broadcast TV have been falling consistently on an annual basis from 2007 until 2011.

Figure 1.2 shows the continued drop in prime time and total day cable viewership, until the 2012 Olympics. The 2012 Olympic lift, shown here, likely marked the peak in overall TV viewership in recent times. The second and third quarters of 2013 saw 325,000 and 113,000 subscribers drop their pay TV subscriptions ^[1].

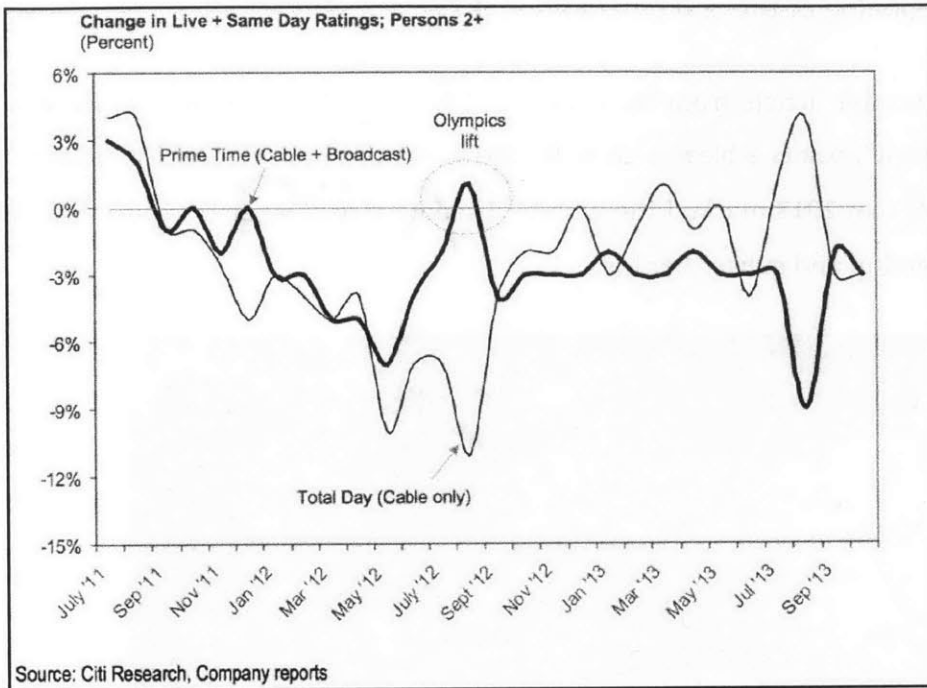


Figure 1.2: Y-on-Y monthly TV viewership, 2011 – 2012 (Source: Business Insider)

As figure 1.3 shows, such oscillations – with drops in Q2, Q3 and additions in Q4, Q1 – are not uncommon. However, The concern is the steady drop in additions and the steady increase in disconnections over the years.

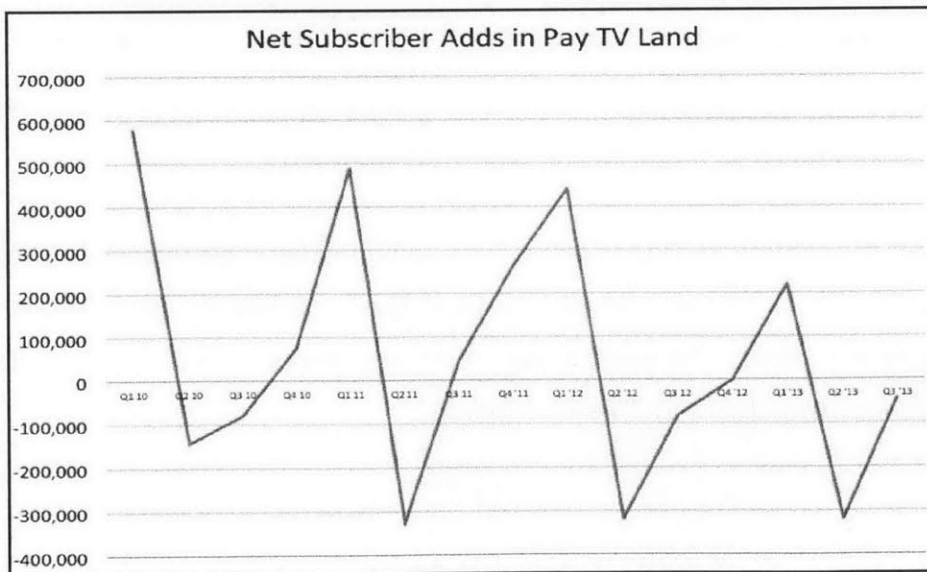


Figure 1.3: Quarterly additions of new Pay TV subscribers (Source: Business Insider)

Between 2010 and 2013, a net of 5 Million subscribers have ended their cable TV subscriptions, and the trend indicates that the net rate of disconnections is increasing.

1.2 Focus of the Thesis – US TV Content Industry

This thesis focuses on the US entertainment TV industry, the trends that are changing this industry, and the drivers of these trends. The focus is specifically on episodic TV content, which consists of non-live programming of entertainment content that is presented to viewers over a linear or on-demand channel.

Certain specific forms of content – sports, news, live programming and other specialized content – are excluded. The viewership and other characteristics for these are different from general episodicals, thus this analysis may not hold on such specialized forms of content. The analysis also focuses on traditional format episodic content – with episodes lasting upward of 20 minutes of content (typically 30 minutes of programming time). Thus this excludes short form user generated content, which are very popular on online channels such as YouTube.

The focus here is on the commercial television industry, which consists of both pay TV (or cable TV) and broadcast TV. Thus, excluded from the thesis is the Public Broadcasting Service (PBS), which is a not profit broadcasting service.

1.3 Approach and Organization

The research uses 2005 as a starting point to study the industry, and uses this as a baseline reference for the “pre-online video” television industry. 2005 marked the launch of several online video services – including YouTube and Hulu. Based on the industry structure, the major players, the revenues, and the subscriber bases, the thesis analyzes the data to show that the major cable operators captured most of the value in the industry, as of 2005.

Following this, the industry study and analysis is repeated for the present day TV industry, specifically focusing on the pay TV delivery segment. This is compared with the 2005 data, to identify the main changes that have occurred in the industry.

The thesis then identifies and studies the underlying drivers that have driven the changes observed. And lastly, the key forward looking implications and opportunities created by these drivers are projected and listed down.

Chapter 1 provides an introduction to the thesis topic, and an overview of the thesis research approach and report structure.

Chapter 2 describes the key theoretical concepts used in the thesis.

Chapter 3 provides an overview of the US TV content industry and studies its state in 2005, highlighting how the major pay TV operators retain the single largest component of the revenue generated in the industry.

Chapter 4 studies the current state of the industry, and identifies the major changes that have happened in the industry in general, and the pay TV delivery sector in detail.

Chapter 5 identifies and describes the underlying drivers for the observed changes.

Chapter 6 then hypothesizes the probable implications of these drivers on the industry, and the opportunities they create.

Chapter 7 is a summary of the thesis report and its conclusions.

2. Review of Theoretical Frameworks

2.1 Dominant Designs and Technology S Curves

The model of technology evolution life cycles, and the emergence of a dominant design, describes how a product evolves through a number of incremental improvements until a version of the product is broadly accepted by the users or the market. The convergence of market expectations and acceptance around a particular design, and a set of product features, marketed the establishing of a dominant design for the product.

The S curve shows the improvement in product performance through this evolution, with slow improvement in the early phases, a rapid increase in product performance once a dominant design was established, and followed by an eventual saturation. The model was proposed by Abernathy and Utterback in the 70s, and continues to provide a fundamental understanding of how new products evolve in the marketplace.^[2]

The evolution of the product can broadly be divided in three phases – fluid phase, transitional phase, and specific phase. The fluid phase is characterized by a lack of established set of expectations about the product, a lack of consistent measure of performance of a product, and numerous directions of effort to further the performance of the product. The fluid phase is also marked by the entry of new players into the domain. T

The transitional phase marks the entry of a dominant design, following which all the improvement efforts are aligned in one or two specific directions. These directions are established by the dominant design. Rapid innovation and improvement of performance are seen in the transitional phase, as product go from “experimental” to “commercial” versions. During the transitional phase, new company entry into the field slows down and consolidation can be observed. Company exits can also be seen, marking either players leaving the domain or being acquired by other companies. The emergence of the dominant design , and the transitional phase, represent a period of high growth in performance and in the business, around a product.

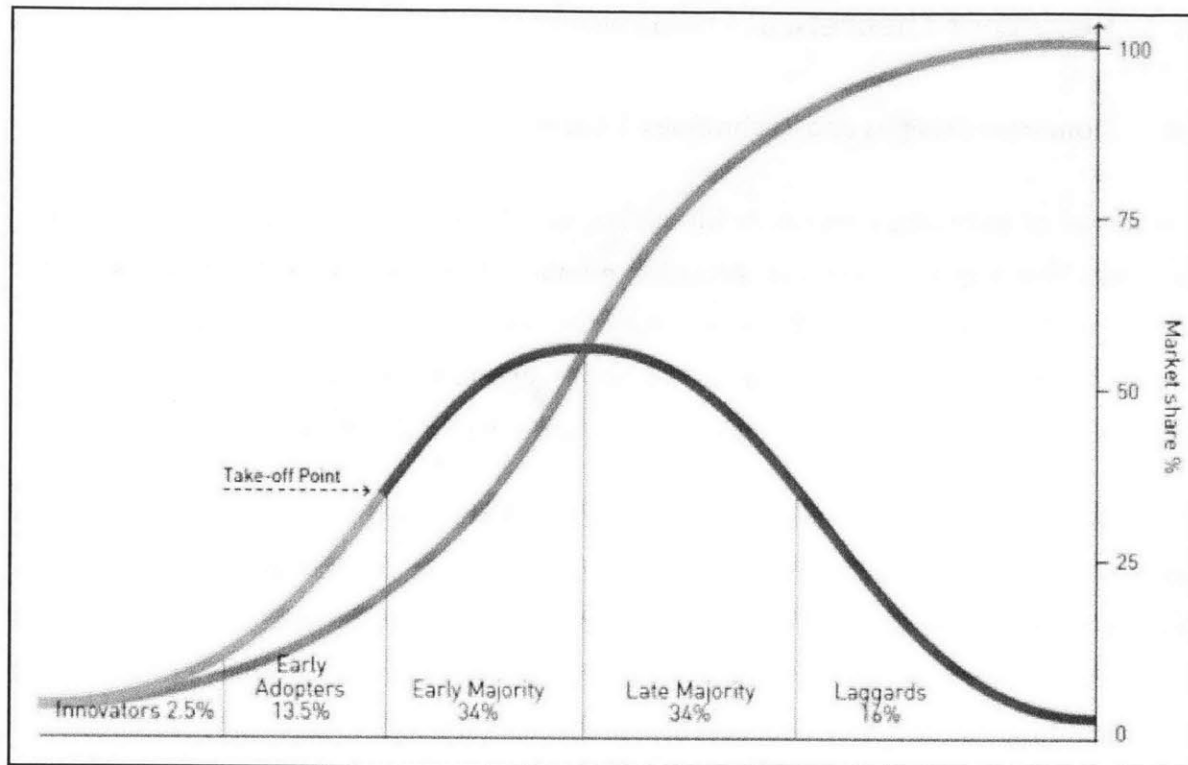


Figure 2.1: Technology Adoption along Life Cycle (Source: Renew Economy)

The specific phase is reached once a dominant design has been established, product performance has matured, and the rate of improvement of performance slows down. Usually, the market has also accepted the current level of performance of the product as acceptable. New company entry into the product field decreases, and the focus switches to integrated solutions, process improvements and so on, around the dominant design. Thus, the number of firms offering the product peaks just prior to the emergence of a dominant design.

This concept was expanded by Geoffrey Moore in his book, *Crossing the Chasm*, to adoption of new technologies by the market. The book highlights the different phases, and types of users that adopt a new technology, and highlights the period of rapid adoption (or market share capture) of a technology happens when the early adopters, followed by the early majority, adopt the technology. This aligns with the emergence of the dominant design, and the rapid adoption by the market of the dominant design.

2.2 Porter's Five Forces Industry Analysis

The five forces analysis of an industry, proposed by Porter [3], is an analysis framework that provides an understanding of the competitive landscape of an industry and the level of profitability that players in that industry can expect. Moreover, it provides an understanding of the crucial scarce resources that will provide competitive advantage in an industry.



Figure 2.2: Porter's Five Forces (Source: Harvard Business Review)

The five forces that affect the competition and profitability in an industry are:

Threat of New Entrants: New entrants to an industry can increase competition and reduce profitability of incumbents in an industry. The easier it is for new entrants to feasibly enter the industry, the higher the threat of new entrants, and the lower the potential for

profitability in the industry. The threat of new entrants depends on the existing's barriers to entry for new entrants, ie, factors that the incumbents possess which would be difficult for a new entrant to gain. The six major barriers for entry are:

- Economies of scale: Requirement for a large volume of business to offset cost disadvantages.
- Product differentiation: Differentiated features that would make incumbents' products attractive – such as branding.
- Capital requirements: High initial investment requirements.
- Cost disadvantages: These are cost disadvantages that a new entrant has, due to IP, pre-existing assets or capabilities that incumbents possess.
- Access to distribution channels: The ability to delivery the products to end users.
- Government policy: Legal restrictions.

Bargaining power of Customers: The bargaining power of the customers, or the buyers of the product, will determine the price points that a product can command in the market. This will directly determine the revenue for a player in the industry. Factors that decrease bargaining power of buyers include product differentiation, few alternate players that provide the product, low concentration of customers and low volume of individual customer purchases.

Bargaining power of Suppliers: Profitability is determined by revenue and cost, and one of the biggest factors determining cost will be the bargaining power of the key suppliers. Suppliers with a high level of bargaining power can impose high costs to players in an industry, driving profitability down. Bargaining power of suppliers can decrease when there are multiple alternate suppliers, low differentiation in the supplied product, or a high concentration of suppliers.

Threat of Substitutes: Substitutes for a product are other products or solutions that a customer can use, to meet the same requirement. This is different from a competitor for the same product. An example is air travel over land travel – for short distance, air travel and land travel are substitutes for each other. If the price of one is too high, customers will switch to using the other. The threat of substitute impacts the price sensitivity and the

willingness of customers to continue using the product at higher prices. Prices place an implicit “ceiling” on the prices that a company can charge for its product, after which customers can be expected to transition away to using the substitute option.

Competition within the Industry: The level of intensity of internal competition in the industry determines the level of control the company has in the industry. High competition puts pressure on profitability by introducing price pressure and increased customer retention costs. Some key factors that impact the level of competition are – a large number of similar sized players, slowing industry growth, undifferentiated products and high exit barriers. Typically, the level of competition in an industry intensifies as the industry matures and the growth slows down, driving players to compete for market share.

2.3 Value Chain, Value Creation and Value Capture

The resource based view abstracts the firm as a bundle of resources, and these resources give the firm the ability to delivery goods and compete in the market place. The scarce resources own by the firm, which are relevant for the industry, generate competitive advantages that drive profitability. These competitive advantages last as long as the resources remain un-imitated by competition, and the resources stay relevant to the industry.^[4]

The “value” of a product is the utility, or the satisfaction, that a customer derives from the product. Value can be separated into two types – use value and exchange value. Use value is the value perceived by the customer, and exchange value is the price paid by the customer, for the product. The use value can also be interpreted as the price the customer is “willing to pay” for a product ^[4], and exchange value is the monetary amount the is exchanged when a transaction of the product occurs. In this thesis, the term value will be used to refer to the exchange value, or the monetary value, of the product.

Products are not usually created and delivered in isolation. A series of activities are required, creating the different sub components of the product. The end firm that creates the product does not create al the subcomponents required for the product. It buys certain

components from other players, who specialize in the creation of their respective components. Products are thus created through a chain of such lower level component creators, and this chain of activities is the “value chain” through which the product is ultimately delivered.

The value that is created by a product is a result of the value chain of activities. The value that is created is thus, split across the different sets of activities of the value chain. Each segment of activities gets some of the total value created as revenue, and each segment pays a certain portion of this revenue to its suppliers as costs, retaining a portion of the total value created by the product. This is the “value capture” by a particular player.

Firms along a value chain co-operate to create value, the final product for the customer. The same firms compete for value capture, to retain the highest possible portion of the value created. The value capture of a firm is derived through its scarce resources, the competitive advantage that the firm derives from these resources, and the bargaining power that this gives the firm in the value chain. Thus, the value capture along the value chain will be highest for firms possessing competitive advantages that provide them the highest bargaining power.

And so, the questions that this thesis focuses on initially are – who were the players in the traditional value chain that captured maximum value in the TV content industry. What capabilities (scarce resources) enabled them to do so? And how has this changed, in recent times? What are the new capabilities that are emerging as potential enablers for value capture in the industry?

3. Understanding the US TV Industry, and a Snapshot of 2005

This section presents an overview of the US commercial TV industry, and the state of the industry in 2005. This is used as the reference point for the analysis in this thesis. The year 2005 marks the end of an era in this industry for the following reasons

- i. For over two decades, cable and Direct To Home (DTH) services have been on the only Pay TV delivery services in the US. The 2005-2006 period marks the entry of new categories of entrants, based on Internet video delivery.
- ii. YouTube, Netflix streaming and Hulu were launched around this period, changing the user expectations and experience, in a field, which had remained relatively stable for the past few decades.

It starts with an overview of the industry and the major activities in the value chain. Then, the section looks the activity segments described in more detail, and identifies the major players in these segments. As section 3.1 will highlight, there exists a high level of vertical integration between the *production* and *aggregation* segments (historically, the top 6 parent companies represent close to 70% of the revenues in both these segments [5]). In addition, all major content production is driven by aggregator commissioning and funding. Thus, a detailed study of the production segment is not done here. Instead, the analysis focuses on the *aggregation* and *delivery* segments; across the commercial *broadcast* and *Pay TV* categories. Following this, the value creation and value capture in the industry is analyzed, based on the revenue generated in the overall TV industry and the proportion of this (on average) retained within each of the segments. The players in the Pay TV delivery segment are then studied in detail, as this segment is seen be the one capturing maximum value in the industry.

The intent is to provide an overview of how the industry works, and have a snapshot of the state of the industry in 2005. This will provide the reference base for studying the present state of the industry and the evolutions in progress.

3.1 The Value Chain in TV Content Delivery – Creation, Aggregation and Delivery

The commercial TV Industry in the US can be divided into two categories, broadcast and Pay TV. Pay TV was and still is popularly referred to as cable TV. In this report, cable operator refers specifically to the traditional pay TV provider that delivered content through dedicated cable infrastructure, and the term pay TV is used to refer to the broader industry.

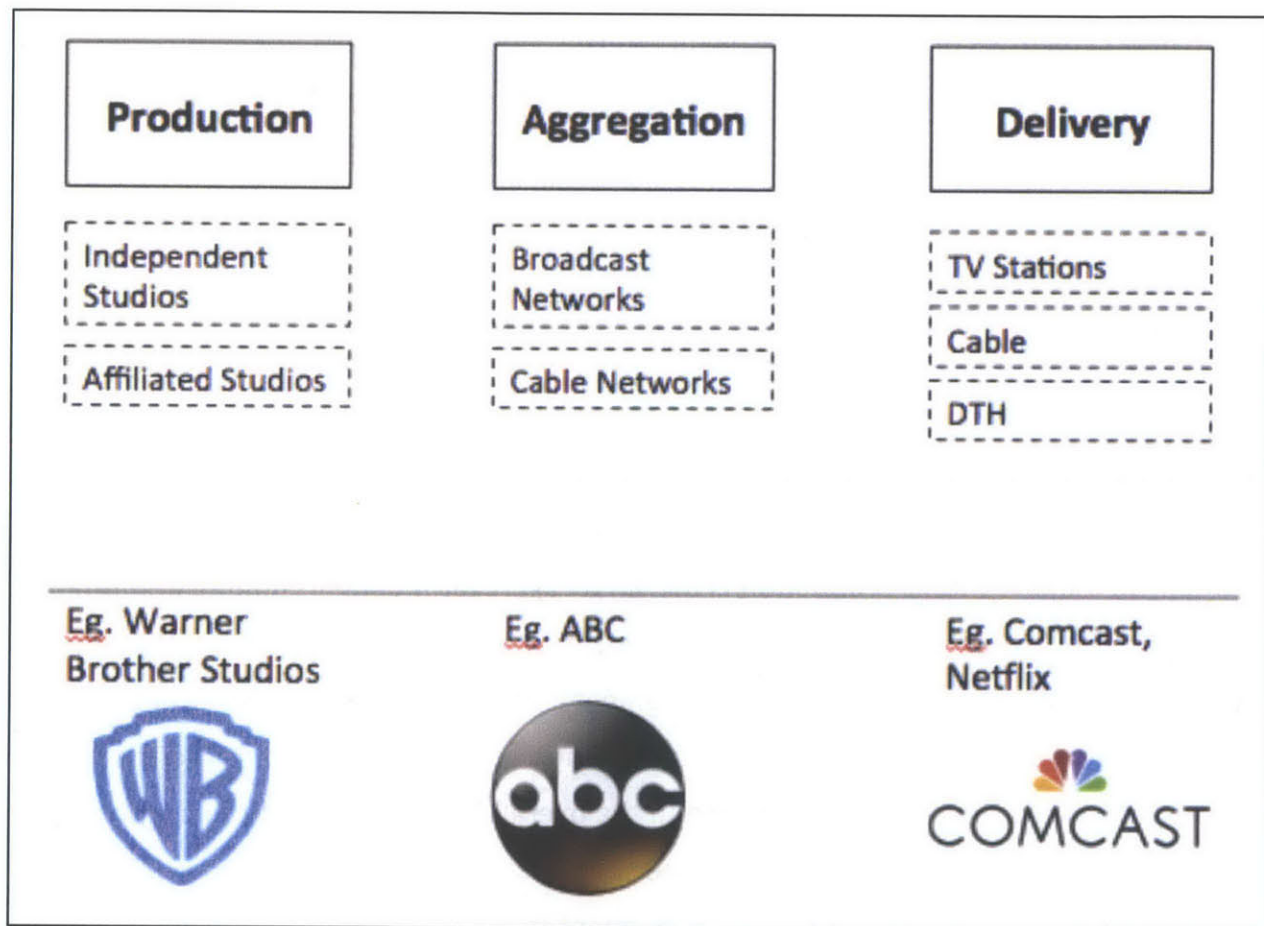


Figure 3.1: US TV Industry Value Chain in 2005

The TV content value chain can be divided into three broad groups of activities – production, aggregation and delivery [5]. Upstream activities are activities that happen earlier in the life of the content deliver chain, further away from viewer. Downstream activities refer to activities later in the life of the content, closer to the viewer. Thus,

production is upstream from aggregation, aggregation is upstream from delivery, and delivery is downstream from both.

Production – Production is where the content is created. This includes all activities in the content creation - concept generation, to scripting, casting, directing, producing and so on. The production activity in turn relies on several other elements further upstream, such as actors, creatives, financiers, production technology companies and so on. The main source of revenue for production players come from license fees, or broadcast rights, for their content.

Aggregation – Aggregation is where different content are brought together and “programmed” into a viewer channel, or a viewer package. Aggregators create and present a “scheduled TV service” for end viewers. Content aggregators are the ones who study and understand user preferences and viewing habits, and create programming of appropriate content for the different viewer segments.

Aggregators acquire broadcast rights to content from production companies. For most major commercial TV content, funding is also done by aggregators. This is known as commissioning. What typically happens is that a concept is created by a production house and pitched to an aggregator. The aggregator is expected to understand the user preferences, and make a decision on whether or not it makes sense to run the show on its programming. If yes, the aggregator “commissions” production of the content, and acquires the rights to show the content on its programming for a certain period. This has created a high level of vertical integration between the aggregation and the production activity.

Aggregation of TV content is done by networks – such as ABC, Fox and HBO. Networks can be broken into two – broadcast networks and cable networks. Traditionally, broadcast networks deliver content to end users Free To Air (FTA), through their affiliate TV stations. Cable networks deliver content through their pay TV operator carriers, through subscriptions. The two primary sources of revenue for aggregators are advertisements and affiliate fees. Advertisement revenue comes from advertisers who place advertisements

into the aggregators channels. Affiliate fees come from delivery companies who carry the aggregators channels or content.

Delivery – Delivery companies manage the actual delivery of the content to an end viewers TV screen, and manage the billing with the subscriber (in the case of Pay TV). Delivery companies invest in the infrastructure (as in cable) or the radio spectrum license (as in over the air broadcast TV stations) to be able to deliver the content. Companies that aggregate channels from networks, and provide them to viewers as a subscription package are known as Multichannel Video Programming Distributors or MVPDs. The two major sources of revenue for delivery companies are advertising and end user subscriptions.

Activities in the commercial TV industry can also be categorized into two groups, based on their commercial relationship with end viewers – broadcast TV and pay TV (popularly known as cable TV). Broadcast TV is free, and is available to users in the vicinity of a carrying TV station at no charge. Pay TV is subscription based, charging a monthly fee to viewers. These are delivered to end subscribers over dedicated infrastructure.

Other than the commercial TV services, which includes commercial broadcast and pay TV, there also exists a not for profit public broadcasting service in the US – the Public Broadcasting Service (PBS). This thesis focuses on the commercial categories and does not delve into the PBS in detail.

As of 2005, the rental and home viewing of videos was mainly driven by movie content. TV content was primarily viewed through TV channels, and through network programming. And so, the traditional rental industry is not studied in detail in the context of TV content.

3.1.2 The Majors as a Dominant force in the Industry

The movie and television industry in the US has been historically dominated by a few major organizations, collectively known as “The Majors”. [6] Table 3.1 shows a simplified overview of the Majors.







Name	Subsidiaries Include	History and Notes
<p><i>NBC Universal</i></p> 	<p>NBC Broadcast Network, Universal Pictures, USA Network, Hulu</p>	<p>Merger of General Electric's NBC, and Vivendi's Vivendi Universal Entertainment in 2004. NBCUniversal is at present (2013) a subsidiary of Comcast.</p>
<p><i>NewsCorp</i></p> 	<p>Fox Network, Star, 34% stake in DirecTV</p>	<p>Renamed as 21st Century Fox since 2012</p>
<p><i>The Walt Disney Company</i></p> 	<p>ABC Network, ESPN, A+E Networks</p>	
<p><i>Viacom Inc.</i></p> 	<p>Paramount Pictures</p>	<p>Created as a spin off from Viacom (now CBS corporation) in 2005.</p>
<p><i>Time Warner</i></p> 	<p>HBO, Warner Bros, TBS</p>	<p>Merger of Time Inc. and Warner Communications in 1989.</p>
<p><i>CBS Corporation</i></p> 	<p>CBS Network, The CW</p>	<p>Formerly Viacom, until 2005.</p>

Table 3.1: The Majors- A Simplified Overview

The Majors, through their subsidiaries, account for over 60% of the economic activity in the production and aggregation activities in the TV industry [2].

Vertical integration by the Majors across production and aggregation is seen as a strategic move to ensure content for their networks; reduce risks and transaction costs; and increase bargaining power for acquisition of new content concepts [5]. Networks usually carry content created by their affiliates, and independent producers account for less than 20% of the programming. Thus, much of the non-delivery activities in the industry are concentrated within the Majors and it is difficult for new entrants to enter the production and aggregation segment.

3.2 Industry Revenue in 2005

The TV industry as a whole, across both broadcast and Pay TV categories, had two major sources of revenue - user subscriptions and advertising. Table 3.1 shows the total industry revenue generated in 2005, across all activity segments. [7] [8]

	Advertising	User Subscriptions	Total (B)
Broadcast TV	48.90	0.00	48.90
Pay TV	20.60	50.40	71.00
Total	69.50	50.40	119.90

Table 3.2: US TV Industry revenue in 2005 (Billion US\$)

Advertising Revenue: Advertising revenue corresponds to 57.7% of all industry revenue, thus representing the major driver for the industry. In 2005, TV advertising represented about 30% of the total US advertising spend for the year.

3.3 Major Players in Aggregation and Delivery

Given the high level of vertical integration between the production and the aggregation segments, the production segment will not be analyzed separately.

3.3.1 The Major Aggregators – Broadcast Networks and Cable Networks

As described in section 3.1, all the major networks are owned by the Majors, and they represent over 65% of all the revenue in this segment.

The following table lists the top Broadcast and Cable networks in 2005, ranked by revenue. Notable networks from sports and specialized content, are excluded here, such as ESPN, CNN, Disney Kids and Nick. [9]

Network	Network Type	Parent
NBC	Broadcast	NBC Universal
CBS	Broadcast	CBS Corporation (former Viacom)
ABC	Broadcast	The Walt Disney Company
Fox	Broadcast	NewsCorp
The WB	Broadcast	Time Warner
HBO	Pay TV/ Cable	Time Warner
TNT	Pay TV/ Cable	Time Warner
USA	Pay TV/ Cable	NBC Universal
TBS	Pay TV/ Cable	Time Warner
A&E	Pay TV/ Cable	Disney & Hearst Corporation

Table 3.3: Top TV networks in 2005 (Source: Broadcasting & Cable Ranking)

As table 3.3 shows, all the top networks are affiliated to the Majors, highlighting the high level of concentration of power within this activity and the dominance of the Majors.

3.3.2 The Content Delivery Providers – TV Stations, Cable and Satellite

The content delivery providers form the customer facing segment of this industry. Delivery plays different roles in broadcast and pay TV. In broadcast, delivery happens through TV stations, which acquire a broadcast license from the government in order to broadcast over a particular frequency band. For cable TV, delivery is carried out through subscription based service providers – such as cable networks.

Broadcast TV: There were 2,218 TV stations in the US in 2005 ^[10]. Each station covers a specific geographic region.

TV Stations may or may not be owned/affiliated with the Major networks. This is a highly fragmented market^[5], with each TV station focusing on its specific geographic focus. Independent TV Stations captured nearly 30% of the TV advertising spend in the US.

Pay TV: The last mile delivery for cable networks is provided by MVPDs. The table below ranks the pay-TV delivery companies in the US, ranked by subscriber base in 2005. ^[5]

Rank	Company	Delivery Type	Parent
1	Comcast	Cable	Comcast
2	Time Warner Cable	Cable	Time Warner
3	Cox	Cable	Cox Enterprises
4	Charter	Cable	Charter Communications
5	Cablevision	Cable	Cablevision
6	Direct TV	Satellite	Direct TV
7	Dish	Satellite	Echostar

Table 3.4: Top MVPD providers in 2005 (by ending subscriber base)

As the ownership shows, Time Warner Cable is the only pay TV delivery company with any affiliation with majors, making this segment one that is distinct and vertically un-integrated with the upstream aggregation and delivery activities. Overall, Cable TV had a subscriber base of over 62 Million users. This represented about 80% of all the pay TV households.

3.4 Value Capture Analysis – Top Pay TV Deliverers Captures Maximum Value

Table 3.5 and 3.6 are an analysis of the revenues that flow in the pay TV and broadcast TV industry, and the value retained within each activity segment. [5] Cost of content and carriage are the biggest costs in the TV industry, representing the risk and initial investment for upstream producers, and accounting for most of the ongoing costs for aggregation and delivery companies [5]. This analysis, therefore, provides an indicative insight into the profitability in each of these segments, based on the portion of revenue retained within each of the operating segments.

	Advertising	Subscription	Total Revenue	Retained	To Upstream
Pay TV Operator	3.40	38.00	41.40	26.91	35%
Satellite	1.24	12.40	13.64	8.18	40%
Network	16.10		36.05	20.54	43%
Production	15.49		15.50	15.50	

Table 3.5: Revenue flows in the Pay TV market in 2005 (\$ Billions)

	Advertising	Syndication	Revenue	Retained	To Upstream
TV Stations	17.00	-5.00	12.00	9.36	22%
Networks	21.70	5.00	26.70	10.15	62%
Production	19.19			19.00	

Table 3.6: Revenue flows in commercial broadcast TV market in 2005 (\$ Billions)

From tables 3.3 and 3.4, it can be observed that the Pay TV delivery segment retains the single biggest portion of the value created in the US TV Industry – approximately 37% of all the revenue in the pay TV category and just over 20% of all the revenue created in the TV industry. This is also a relatively low risk business, unlike production and aggregation. The following analysis gives an insight into the partitioning of the profitability within this segment, among the players in the Pay TV delivery field.

3.4.1 Subscriber Bases and ARPUs of Pay TV delivery companies

Table 3.7 shows the number of subscribers, ARPU and Revenue of the top MPVDs. [5]

Top MVPD Providers in 2005	Subscribers (Millions)	ARPU (\$ per month)	Rev (\$ Billions)
Comcast	24.1	44.67	12.92
Directv	15.1	67.27	12.22
EchoStar	12.1	55.27	7.98
Warner Cable	8.6	58.55	6.04
Cox	6.3	49.80	3.77
Charter	5.9	48.20	3.40
Adelphia	4.9	57.58	3.37
Cablevision	3	63.58	2.31

Table 3.7: Revenue, subscriber bases and ARPU of Major Players in Pay TV delivery

The top 4 MVPDs account for 67% of all pay TV subscribers [11]. This gives them a high level of bargaining power, given the TV industry is primarily driven by advertising and user subscriptions – both driven directly by higher viewership.

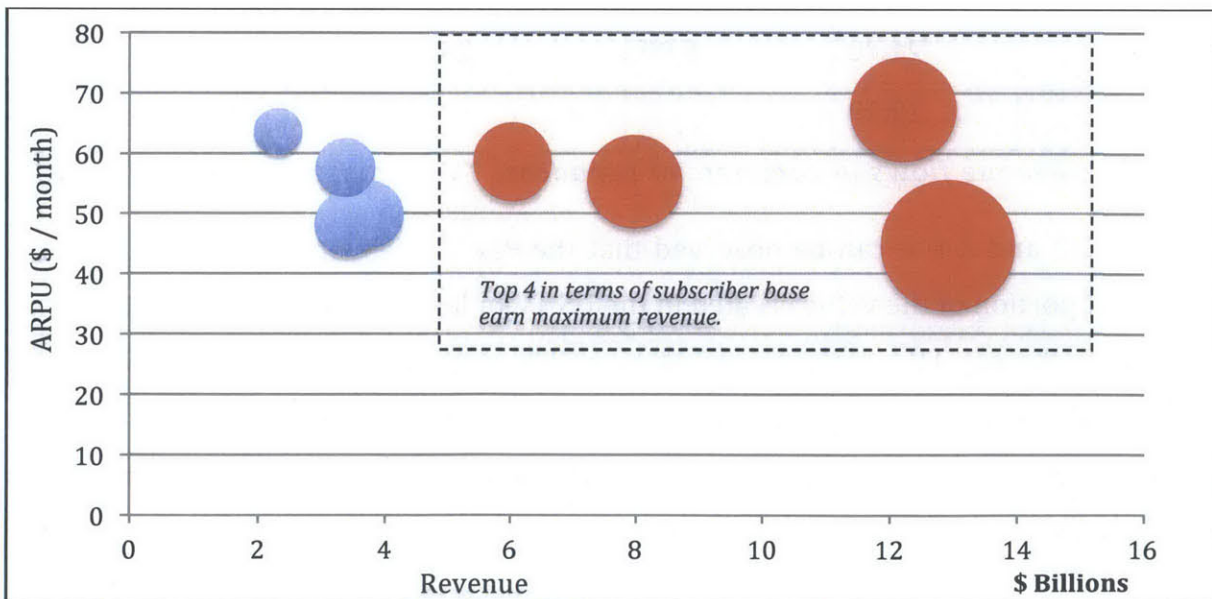


Figure 3.3: ARPU, Revenue and Subscriber Base for Pay TV Delivery Players

This is reflected in the earnings of the top 4 MPVDs, which earn over 80% of all the revenue. As figure 3.3 shows, these also have the most subscribers. The ARPU varies across companies.

3.4.2 An Analysis – Competitive Strength for Incumbents in Pay TV Delivery

Porter's Five Forces Analysis of pay TV delivery business as an Industry

- **Threat of New Entrants - Low**
 - High Barriers for Entry - Heavy infrastructure investments required for pay TV providers, as connectivity requirement for high quality video delivery cannot be met by existing infrastructures (telephone, Internet). Cable TV industry has invested over \$ 105 Billion (as of 2005) ^[12] on the current infrastructure.
 - Cable subscription growth is nearly stagnant, and this is not a growing market where a new entrant can tap on market growth for entry.
- **Bargaining Power of Suppliers - Low**
 - The primary suppliers of content are the major cable networks, whose revenue is proportional to the number of users that they can reach.
 - The only access to users is through the operators.
 - The top 4 MVPDs serve over 60% of all the MVPD subscribers, giving high bargaining power for the top MVPDs.
- **Bargaining Power of Buyers - Medium**
 - Cable network content is only available to users through pay TV operators.
 - High quality content usually comes from the major networks.
 - Bundling of channels makes it difficult for customers to pick and choose content across multiple operators.
- **Threat of Substitutes - Low**
 - TV Content viewing has been an established pastime and the time spent on TV is higher than all other mediums, close to half the total time spent on all content mediums. ^[13]
- **Competitive Rivalry in the Industry - Medium / High**
 - The lack of growth in pay TV subscribers has been increasing the competitive pressure within the pay TV delivery segment, to win customers from other operators. Switching data shows? ^[13]

Figure 3.4: Porter's analysis of the pay TV delivery business as an industry

Source of Competitive Advantage – Infrastructure and Reach, The Critical Resource

The primary competitive advantage enjoyed by the top pay TV companies, comes from their investments in infrastructure and the user reach that this infrastructure provides. This competitive advantage is created due to two reasons:

- i. High investment costs and time required for a new entrant to build and scale up this delivery system for a sizeable number of users.
- ii. Top 4 MVPDs account for access to over 60% of the MVPD subscriber base, which accounts for about 40% of all the US households. Such a nationwide reach is not possible through any existing paid video delivery mechanism.

4. The TV Content Industry in 2013 (The Present)

This section reviews the present state of the US TV Content industry. The closing financials from 2012 are used for the industry analysis.

4.1 A Re-Look at the TV Content Industry – New Entrants in the Value Chain

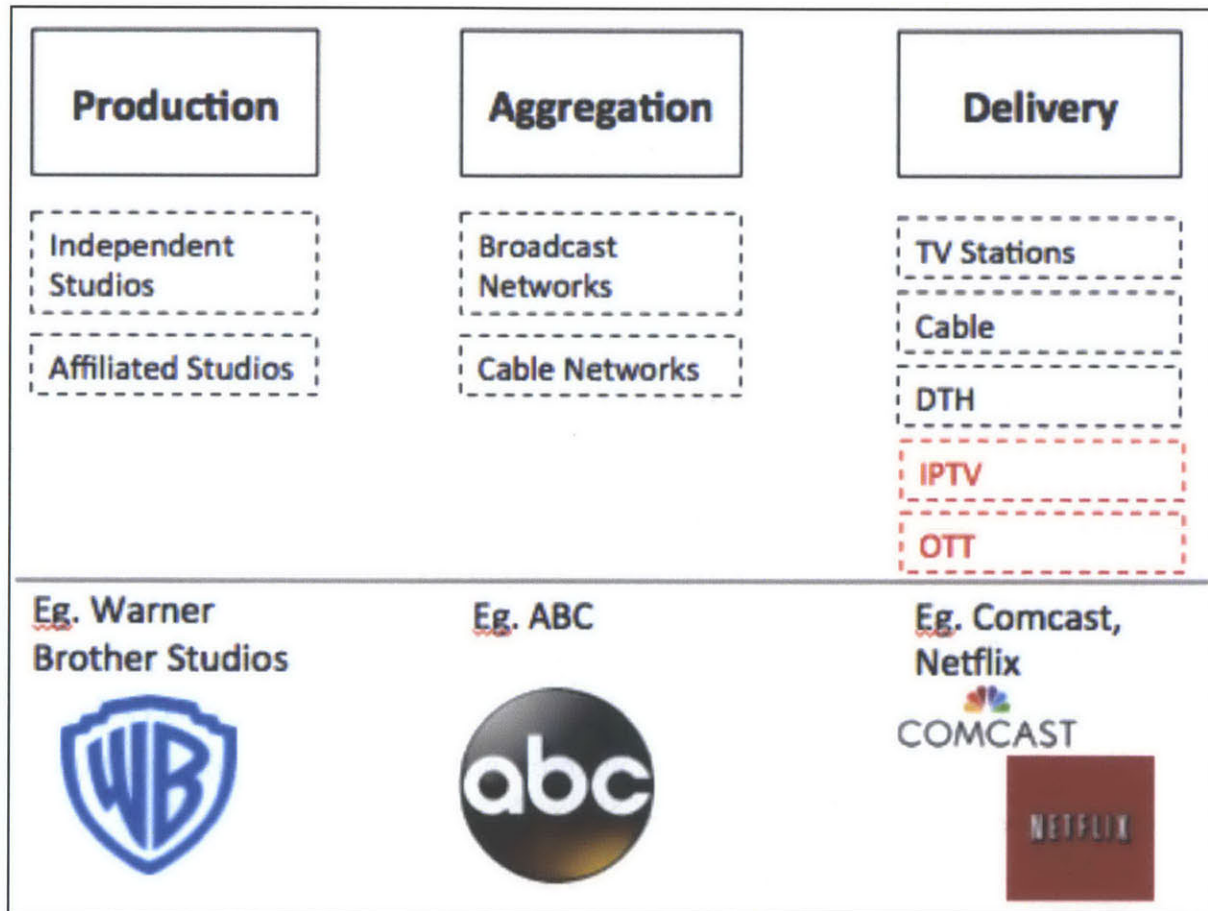


Figure 4.1: New Entrants in the US Content Viewing Value Chain

The pay TV delivery activity now has two significant categories of new entrants – Internet Protocol Television (IPTV) based Pay TV providers, and Over The Top (OTT).

OTT – Over the Top, or OTT, video refers to the delivery of video to an end viewer over the Internet by a source other than the network service provider. So the video delivery is independent of the network provider. ^[14] Notable OTT services are Netflix, Hulu, Amazon Instant Video and YouTube. As of 2013, the legal framework uses the net neutrality

principle, which requires Internet service providers to treat all data all the Internet pipe equally, without providing preferential treatment for their own value added services. This allows OTT to compete effectively with Internet video services from the Internet pipe owners.

IPTV – Internet Protocol Television, or IPTV, is a system of delivering video content to an end viewer over the Internet. IPTV is different from streaming videos over the Internet, in that it is delivered over a managed network. Thus, an IPTV provider is able to guarantee a quality of service and reliability to the video content delivery, which is not possible for OTT video providers. [15] The two major IPTV service offerings in the US are AT&T Uverse, and Verizon FiOS. Both AT&T and Verizon are major telecom operators in the US, and they were able to leverage their existing infrastructure and user base to enter this domain.

Although significantly smaller in terms of the revenue streams that these new categories have been able to capture, these offerings have seen exponential growth in user numbers.

OTT and Netflix as TV Content Industry Players

Prior to the advent of OTT, TV content viewing was primarily driven by programmed TV channel watching. Time shifted viewing of TV content was not a major market, and the rental industry was mainly driven by movie rentals. Since the advent of OTT, this has changed. Short format content is highly popular on pull based streaming, and 80% of Netflix content viewership is TV content and not movies. [16]

4.2 Industry Revenue has Grown

The table below shows the revenue for the broadcast and Pay TV business in 2012, including subscription based OTT services. [8][17][18][19][20] The revenues of services such as YouTube is not included here, since the viewership is primarily driven by short form content and not TV episodicals.

	Advertising	Subscriptions	Retransmission Fees	Total
Broadcast	49.70	0.00	2.30	52.00
Pay TV (non OTT)	27.90	58.10	-2.30	83.70
OTT	3.50	4.80	0.00	8.30
Total	81.10	62.90	0.00	144.00

Table 4.1: US TV Industry Revenue in 2012 (\$ Billions)

Here, OTT is shown as a separate category, in order to do a clear comparison for the traditional categories for 2005. However, subscriber based OTT activity can be considered part of the pay TV category. Overall industry revenue has grown since 2005. Revenue within the traditional MVPD business has also grown in this period.

Retransmission Fees: Retransmission fees are fees paid by cable companies to broadcast TV stations, to carry their channels and programming over cable. The Communication Act of 1934 [21] requires that MVPDs carry local TV station channels, and that TV Stations give consent to MVPDs to carry their channels. The US Cable TV Protection and Competition Act of 1992 [22] required MVPD carriers to explicitly get approval from TV stations, under agreeable term of carriage, to carry their channels. In the early years since introduction, the terms of consent have often been non-monetary. But this has gradually changed, to retransmission consent now forming approximately 5% of the total revenue in broadcast, and an important source of revenue for local TV stations [23]

No Cannibalization of TV Advertising Revenue by Online Video Advertising Observed: A positive signal is that overall TV advertising revenues do not show signs of cannibalization from online and mobile video mediums. TV advertising continues to grow at pre-OTT growth rates. Advertising revenue still accounts for slightly over half of all the commercial TV industry revenues ^[20] (excluding OTT). And TV advertising revenue has shown annualized growth rate of over 3% ^[24] over the past 5 years.

4.3 Review of Major Players in the Value Chain

This section lists the major players in each of the major activities. The intent is to understand the changes in players, and the level of change in each segment. As in section 3, content production is not studied in detail due to the high level of vertical integration with aggregators and commissioning.

4.3.1 The Major Aggregators – Continued dominance of Majors

Table 4.2 lists the top broadcast and cable networks in the US, as of 2011. ^{[25][26]}

Network	Network Type	Parent
CBS	Broadcast	CBS Corporation (former Viacom)
Fox	Broadcast	21 st Century Fox (former NewsCorp)
NBC	Broadcast	NBC Universal
ABC	Broadcast	The Walt Disney Company
The CW (former WB)	Broadcast	CBS Corporation & Time Warner
HBO	Pay TV/ Cable	Time Warner
TNT	Pay TV/ Cable	Time Warner
TBS	Pay TV/ Cable	Time Warner
A&E	Pay TV/ Cable	Disney/ Hearst Corporation
ABC Family	Pay TV/ Cable	The Walt Disney Company

Table 4.2: Top Broadcast and Cable networks in 2011

As table 4.2 shows, there has been some re-ordering of ranking, but the Majors continue to dominate the aggregation segment.

4.3.2 The Content Delivery Providers – Entry and Growth of IP TV and OTT

In the content delivery segment, Comcast continues to dominate in terms of revenue. Comcast is also the largest of the traditional MVPD providers, in terms of user base. Table 4.4 lists the top MVPD providers in the US as of end 2012, ranked by subscriber base. [8]

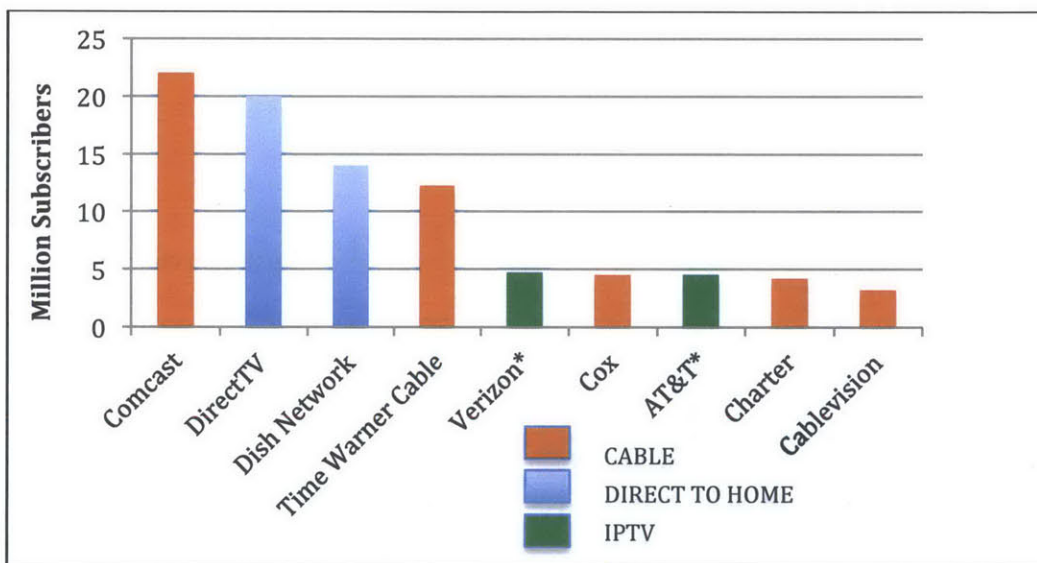


Figure 4.2: Top traditional MVPD providers in 2012 (by ending subscriber base)

The top 9 MVPD providers now includes the two new entrants from the Telco space, who are offering IPTV based pay TV services.

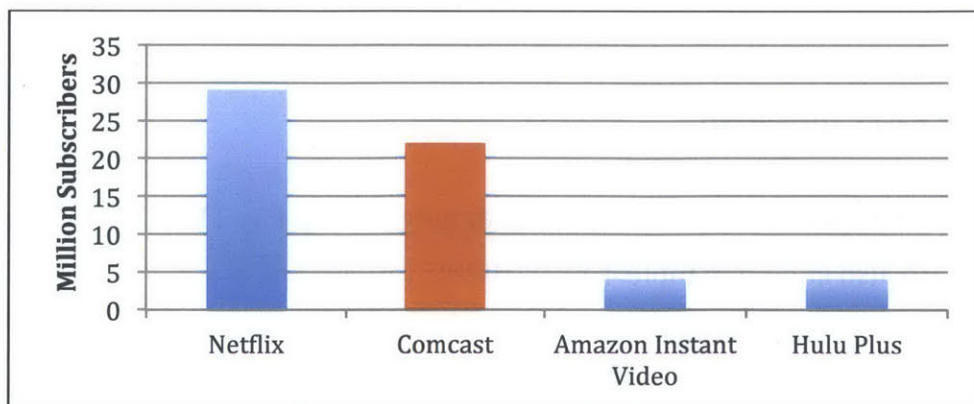


Figure 4.3: Top traditional OTT providers in 2012 (by ending subscriber base)

OTT content viewing has also grown, with over 32 Million households subscribing to atleast one OTT service^[27]. Figure 4.3 shows the top OTT subscription services in the US ^{[28][29][30]}. Also included is Comcast, the largest traditional MVPD, for reference.

4.4 Value Capture Analysis – Review of Pay TV Delivery Segment

Figure 4.4 shows the flow of revenue in the Pay TV market, based on the ending figures from 2012. ^{[8][17][18][19][31][32]}

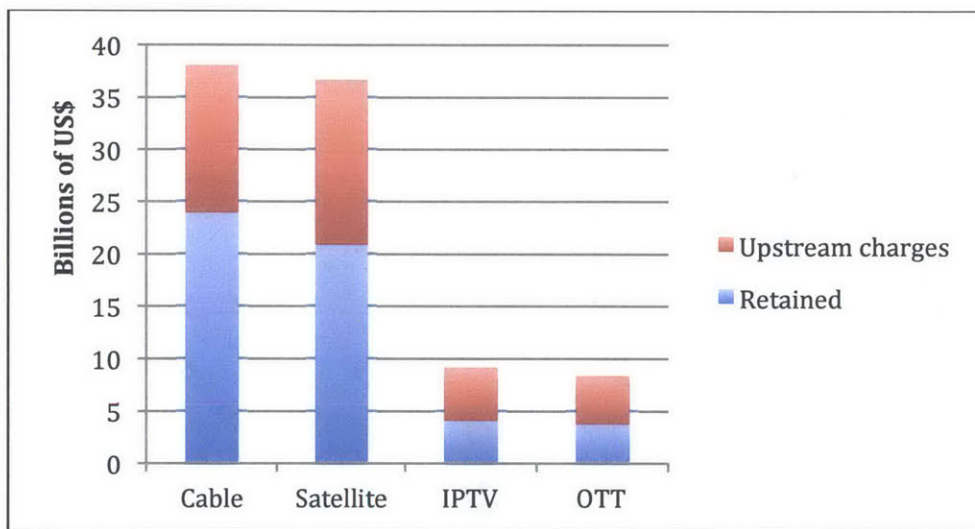


Figure 4.4: Revenue flows in the Pay TV market in 2012(* Estimates)

As this shows, Cable TV continues to capture most of the revenue being created in the Pay TV category. And the value capture for cable companies continues to be high, retaining over 60% of the total revenue in the cable TV segment and over 28% of all the Pay TV revenue (including OTT).

4.4.1 Subscriber Bases and ARPUs

ARPUs, subscriber bases and revenue estimates among the top Pay TV delivery companies (including OTT) are also shown in table 4.3. ^{[33][34][35][36][37][38][39]}

As table 4.3 shows, Netflix is now the single largest pay TV provider, in terms of user base. But the top delivery providers in 2005 continue to earn the highest revenues in this segment. Moreover, ARPU numbers have not dropped for the top providers.

Top MVPD Providers in 2012	Subscribers (Millions)	ARPU (Dollars / month)	Revenue* (\$ Billions)
Netflix	29.0	10.60	3.69
Comcast	22.0	143.40	37.86
Directv	20.0	91.90	22.06
Dish Network	14.0	76.71	12.89
Time Warner Cable	12.2	75.01	10.98
Verizon*	4.7	52.00	2.93
Cox	4.5	76.00	4.10
AT&T*	4.5	85.00	4.59
Charter	4.2	71.80	3.62
Cablevision	3.2	155.00	5.95
Amazon Instant Video	4.0	6.58	0.32
Hulu Plus	4.0	7.99	0.38

Table 4.3: ARPU, Revenue and Subscribers for deliverers in 2012

(Estimate from ARPU)*

4.4.2 Profitability Analysis – Changes in Technology Reducing the Barrier for Entry

As highlighted in section 3, the primary competitive advantage that the top MVPDs enjoyed was the ability to reach a large number of viewers and deliver video content. With the growth of online video technologies, IPTV and OTT delivery services are now able to offer acceptable level of entertainment video deliveries at much lower costs – thus removing the barrier to entry to the Pay TV delivery market. The incumbent MVPDs still hold their existing subscriber bases and continue to pay significant affiliate fees to their upstream partners, thus providing them strong capabilities to be competitive in this segment.

4.5 Observation of Changes between 2005 and Present

This section lists the main observation made, in terms of changes from the state of the TV Content Industry between 2005 and today – focusing on the pay TV delivery segment.

4.5.1 Pay TV Delivery Segment has Several Successful New Entrants

The biggest change observed, is the entry of new entrants in the Pay TV Delivery segment. In 2005, Comcast was the single biggest Pay TV subscriber. As of end 2012, Netflix has higher paid subscribers than Comcast. The traditional barriers for entry into the Pay TV delivery segment, because of the high investment infrastructure requirements, have been removed.

4.5.2 Strong Growth in Subscriber base of New Entrants – OTT and IPTV

The new entrants in the Pay TV segment, offering OTT and IPTV based TV content offerings, have seen rapid growth in terms of subscriber bases. IPTV and OTT offerings are available at significantly lower price points, compared to traditional cable, in many cases less than a fifth of the cost of traditional cable. [40]

4.5.3 Advertising Spend on Traditional TV has not Dropped

Although there seems to be rapid growth in online and mobile video consumption, advertising spending on TV continues to grow at a healthy rate. This is despite the stagnant viewership numbers.

4.5.4 Revenue and ARPUs continue to be high for traditional MVPDs

Overall revenue for the top traditional MVPD providers company has continued to grow, albeit at a slower rate than prior to 2005. Although there has been a decline in the subscriber base, the ARPU of traditional cable companies has increased.

5. Analysis of Underlying Drivers

This section introduces and explains the underlying trends that are driving the changes observed in chapter 4. The following are the underlying drivers that have driven the changes observed.

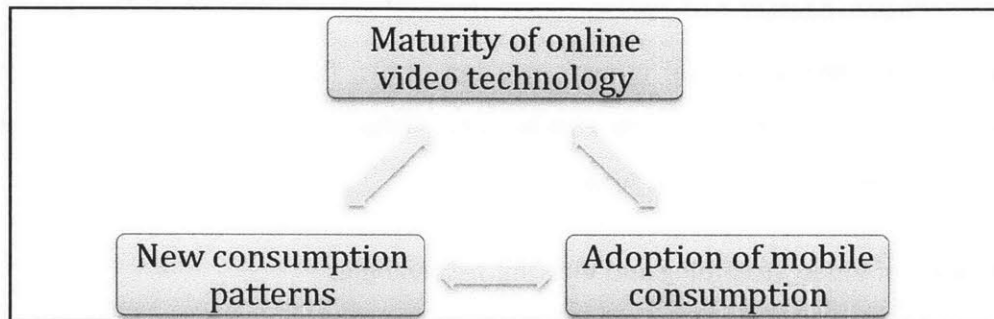


Figure 5.1: Underlying Macro Trends Affecting TV Industry

5.1 Maturity and Growth of OTT Video Delivery

Historically, the incumbents in the Pay TV delivery segments enjoyed a high level of competitive advantage. As seen from the Porter's analysis earlier, this advantage came from a combination of the high barrier for entry for new entrants into the field and the lack of alternate mechanisms through which aggregators could provide content to viewers. Cable and Direct To Home (DTH) providers invested heavily in the critical resources and the infrastructure required to deliver high quality video to end users' homes. [41] This allowed them to maintain this competitiveness.

This remained a high barrier for entry, until the growth and maturity of the Internet and personal computers. The Internet offered the potential for an alternate connectivity link into the viewer's home, without the need for the traditionally heavy investment infrastructure. [42]

5.1.1 Growth in Last Mile Bandwidth

Since the initial video over Internet efforts in the early 1990s, Internet video has undergone a massive improvement. At a very basic level, this has been enabled by rapid increases in Internet bandwidth, particularly the last mile bandwidth to the end user, since 2005. ^[43]

Cisco's report predicted an annual growth in video traffic, from an insignificant portion of overall Internet traffic in 2005 to nearly 25% in 2011. Today, Internet video accounts for over 50% of all the Internet traffic in North America. ^[44]

5.1.2 Maturity of Video Streaming and Viewing Technologies

The improvements in pipe speed paved the way for investments and improvements in the technological components and standardizations required to transport and view video content on end users computer screens. ^[44]

The initial effort in the industry focused on a common client for generic real time as well as video streaming use cases. This, however, resulted in inefficiencies resulting in lower quality of video and several latency issues. The traditional streaming protocols – Real-time Transport Protocol (RTP)/ Real Time Streaming Protocol (RTSP) – performed well for addressing the sequencing gaps of UDP while utilizing its lower overhead. However, the performance of RTP/RTSP was not suited for the widely varying set of Internet link conditions to be handled in consumer video delivery. Moreover, the protocol was design for one-to-one connections, which did not scale to the “Internet video broadcast” type of use case very well.

Several alternatives and technologies were proposed and demonstrated – including Mbone ^[45], multi-rate streaming, Adobe Real Time Messaging Protocol (RTMP), progressive download, and HTTP Streaming. In parallel, improvements in viewing tools, development kits, and presentation technologies were also taking place – to enable commercial deployment. One of the pioneering companies in the field of Internet video streaming was

RealNetworks [46], who introduced the RealPlayer in 1995. This was one of the earliest successful streaming media players. Other popular presentation frameworks include Adobe Flash, Microsoft Media Player, Microsoft ActiveX plugins and HTML5 for in-browser viewing.

5.1.3 Emergence of dominant design – S curve

The impact of these improvements on the growth of Internet video solutions can be clearly observed through the S curve of company entries into Internet video streaming platforms.

Figure 5.2 maps the number of new entrants in Internet video platforms, to their year of introduction. According to theory, the peak in new entrants followed by a steep drop signals the establishment of a domain design.

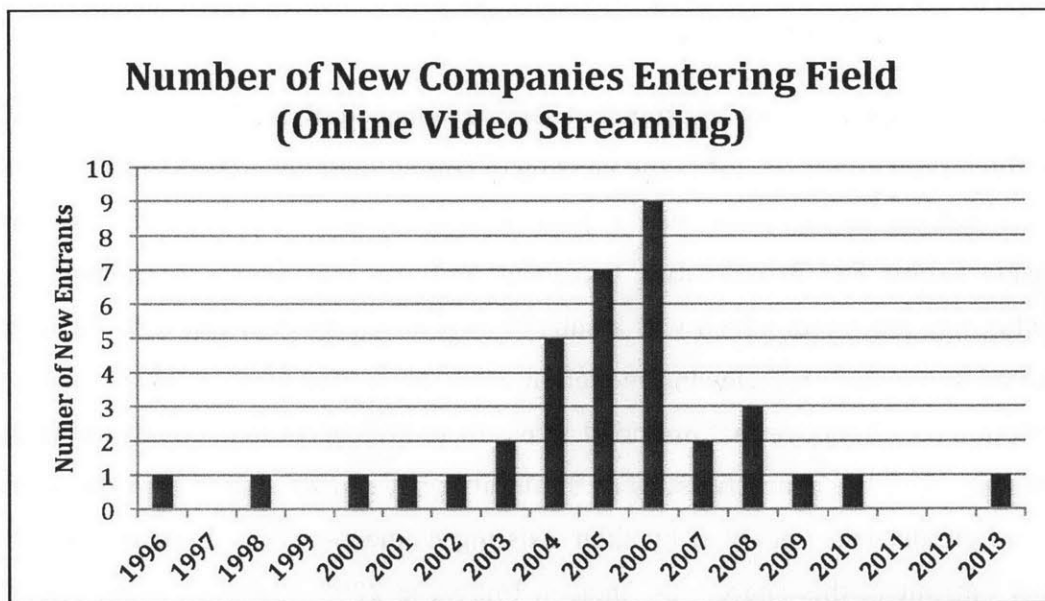


Figure 5.2: Company entry in Internet video streaming solutions

In Figure 5.2, the peak can be observed around 2006. The YouTube service was launched in November 2005. YouTube grew rapidly in popularity, and by July 2006, the site was getting over 100 Million video views per day. [47][48]

The ease of use and free viewing model resulted in rapid adoption of YouTube, and also served educate the viewers on the new – “on-demand, browser based, low-cost video consumption model” which has now become the dominant consumption workflow for Over the Top (OTT) video consumption.

5.1.4 Growth of OTT Services – and Emerging OTT Compatible Hardware

The maturity of Internet video delivery made OTT video delivery services a viable option to deliver acceptable quality videos to end users. And the adoption of YouTube, and other similar free streaming sites, served as education to general viewers regarding the new workflow. This also served to familiarize and acclimatize viewers with viewing content on a computer screen. In 2007, two important new solutions entered the OTT space – Hulu and Netflix. Both companies had their foundations and connections in the media business, which arguably enabled them to get access to content.

Netflix streaming video was an extension service launched by Netflix, which by 2007 was one of the largest channels for home viewing of content and had a paid subscriber base of over 5.5 Million users. Hulu was a joint venture which included the NBCUniversal Television Group, Fox Broadcasting Company, and The Walt Disney Company. In 2009, Hulu Plus was launched, which was a subscription based service. The Hulu basic service was an ad supported free viewing model. In 2009, Hulu Plus was launched, which was a subscription based service that provided access to additional content. Consistent with what was described as the characteristics of the industry, it can be argued that the success of Hulu and Netflix were enabled by their existing connections and base in the industry. Another entrant in this space was Amazon Unbox, in 2006. However, rapid adoption of Amazon’s offering started only in 2011, when it was rebranded to Amazon Instant Video and the library of titles was enhanced ^[49]. One of the factors that enabled rapid adoption of these new “Pay TV” services, was their competitive pricing. There is an order of magnitude difference between the traditional cable prices, and the OTT offerings. ^[49] Figure 5.3 highlights the lower price point at which the OTT players offer subscriptions to end users.

The significance here is that with the launch of these services, an alternate Pay TV delivery channel with access to legal and complete content was now established – in the segment that had been historically dominated by the incumbent cable service providers. An interesting observation point is that Comcast became the majority stakeholder of NBCUniversal in 2009, thus ending up owning the 30% stake that NBCUniversal held in Hulu. Although federal ruling prevented Comcast from being actively involved in Hulu’s operations, this action gave Comcast a stake in the emerging new OTT based delivery market.

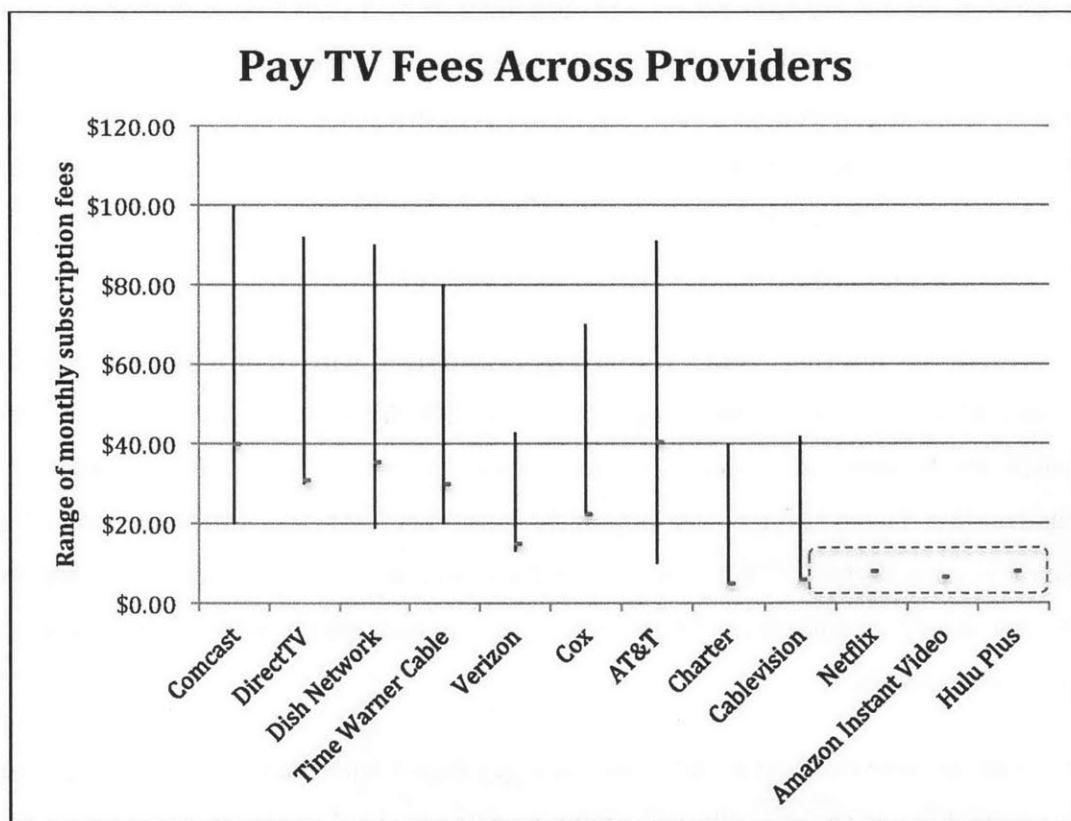


Figure 5.3: Current Range of Pay TV Fees, Showing Lower Price of OTT

Thus, by 2010, OTT had grown from a disorganized user-generated-content viewing mechanism to the fastest growing Pay TV consumption channel [14] But OTT viewing still has one significant drawback – the workflow was substantially more complex than traditional TV viewing – involving a computer, login and so on. This has gradually started changing in the last two years, with the advent of hardware devices that are designed to

connect OTT to the traditional TV and allow a seamless experience. Notable examples of such hardware are the Apple TV, Google Chromecast, Xbox and so on. ^[50]

5.1.5 Upward Vertical Integration and IP TV Offerings by Telcos

As expected, the growth of Internet video resulted in the emergence and growth of several new Internet video service solutions. In addition, it resulted in the entry of communications companies into the Pay TV delivery segment.

Historically, the TV Industry has been characterized by a high level of vertical integration between the production and aggregation segments; a fragmented broadcast delivery segment; and a highly concentrated Pay TV delivery market. The barrier to entry for Pay TV delivery was high due to the high initial investments in infrastructure needed, and the difficulty for new entrants to reach comparable number of viewers (as incumbents) to be able to negotiate carriage rights with networks and rights owners.

The growth in Internet video technology, combined with high internet penetration, reaching 42 Million subscriptions, approximately 200 Million users, in 2005, ^{[51][52]} made it possible for broadband Internet service providers to launch Pay TV services on their infrastructure. These services are popularly called IPTV services, different from OTT. The main difference is that IPTV providers use their own infrastructure for providing content. And the content viewing is on TV through a set top box, which is similar to traditional TV viewing experience.

The lower incremental cost in infrastructure, combined with the high subscriber bases that the Telcos had access to, allowed them to operate this business without as high an incremental operating cost as a pure new entrant into the business. These cost savings could be translated to lower subscription charges, thus making the offering competitive.

5.1.6 Shift in User Base of Pay TV Subscribers – Growth of New Services

The new pay TV delivery services have gained user base over the last 5 years. Figure 5.4 shows the growth in user subscriptions across delivery services, since 2005. ^{[27][53]}

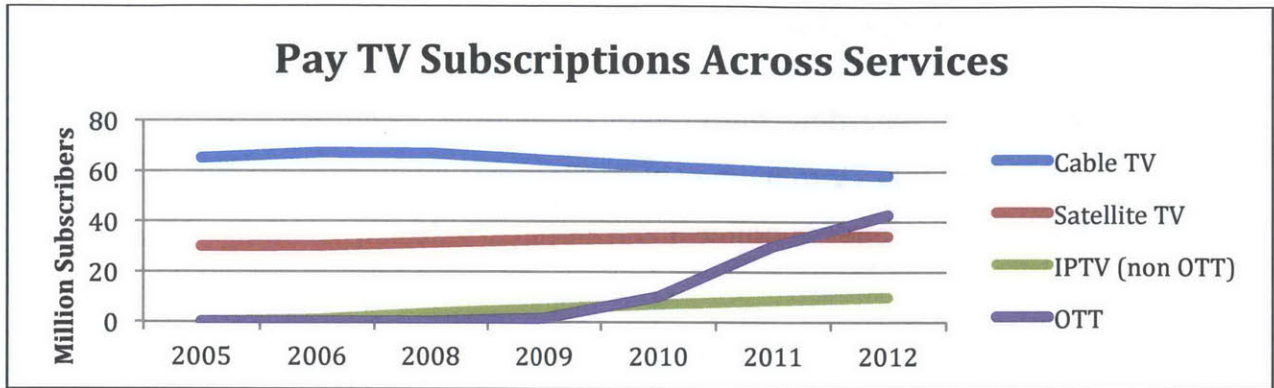


Figure 5.4: Subscriptions across Pay TV Delivery Services

Cord-cutters, is the term used to refer to traditional Pay TV subscribers who discontinue their subscriptions (or cut the cord), switching to alternate content viewing solutions. The argument against cord-cutting as always been that the numbers do not reflect a significant drop in subscribers. [54] However, in the recent quarters, there has been a drop in the subscriptions that indicates that cord-cutting may indeed be a growing phenomenon. A recent research data compilation indicates that there has been an overall loss of over 0.1% of subscribers in just Q3 of 2013. [54] Q2 2013 has seen a drop in 538,000 subscribers from cable and 62,000 subscribers from direct to home satellite services. In the same period, IPTV services have grown by 275,000. The net result is a drop in 325,000 traditional MVPD subscribers. In the same period, Netflix added an additional 1.16 Million subscribers. Figure 5.5 below summarizes these numbers. The research also shows that 42% of non-subscribers are subscribers of either Netflix, Amazon Instant Video or Hulu Plus.

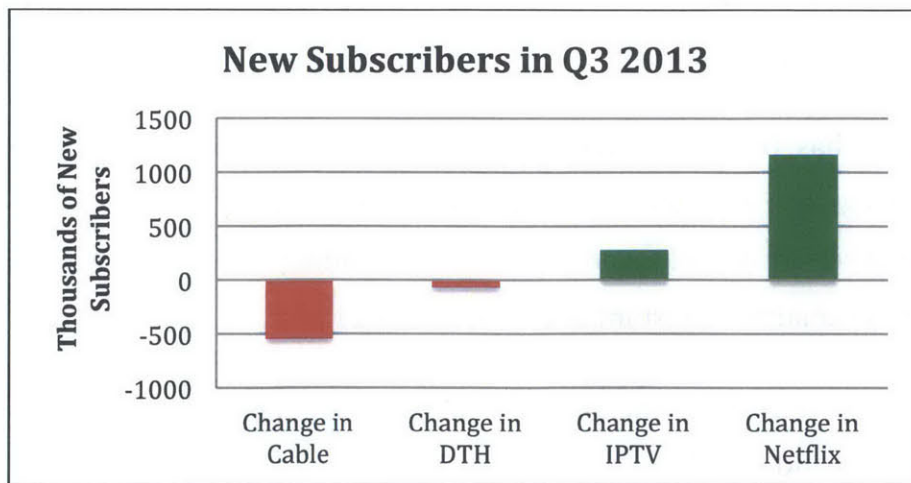


Figure 5.5: Q3 2013 Change in Pay TV subscriptions

5.1.7 Advertising Spending Trends

One of the early fears regarding the growth of Internet video and OTT, is a shift in advertising from traditional TV to online video. [Ref] This, however, has not yet happened yet. Figure 5.6 shows the trends in online and traditional video ad spending in the US, since 2008. [55]

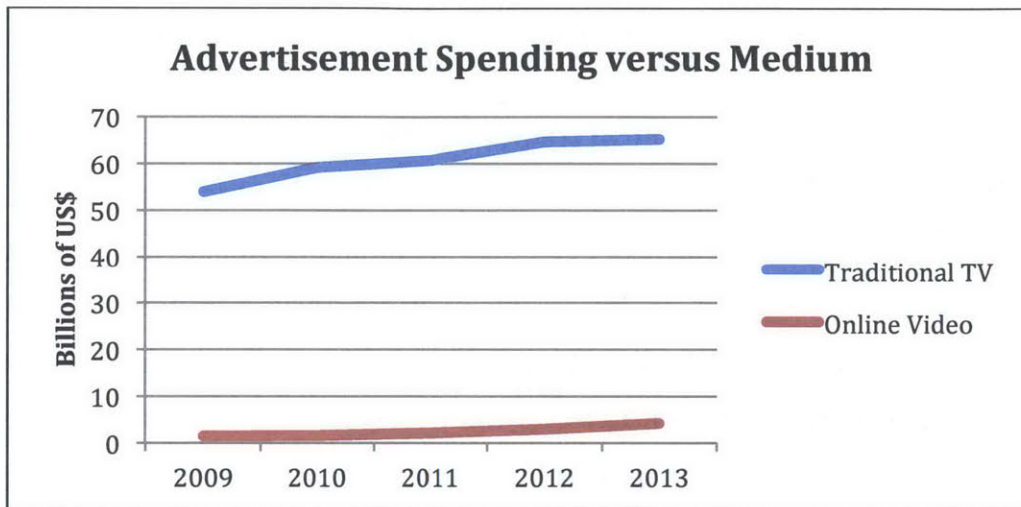


Figure 5.6: Comparison of Online video and Traditional TV ad spending

There is not enough evidence to show that TV advertisement spending is now being diverted to online video ads. [56]

Even though the rate of increase of online video spending has been high, over 40% CAGR in the last two years, the magnitude of this spending still remains an order below that of tradition TV advertising spend.

In reality, what has been observed is that the rate of growth of online video property advertising has grown at a rate that is consistent with overall Internet advertising growth. The IAB annual report on online advertisement spending indicates that the share of online video video has remained constant at 6% across 2011 and 2012. [56]

One of the biggest reasons, is the lack of availability and maturity of reliable measurement services for online video. [57]

Based on current trends, the TV Ad spending is expected to remain healthy, in spite of the lack of growth in reach. ^[58] Major marketing research forecasts, Nielsen, Kantar, PwC, are aligned in forecasting an annual growth rate for TV advertising around 5% over the next 5 years.

5.1.8 Challenges in Measurement

Advertising and valuing advertisement properties on traditional TV is a well established and mature model. There are well established and reliable measures of viewership, audience ratings and demographics of various TV shows, channels and timeslots. This allows meaningful valuation of the advertising properties available on TV, and also a measure of the effectiveness or reach of an advertising campaign. A leading example is the Nielsen TV ratings system ^[59], which uses electronic metering system to accurately identify what shows and channels are being viewed across households. Since 1936, this technology has powered audience measurements for TV viewership. However, with the advent of OTT and non-TV based content viewing, this measurement system has not yet been able to scale to capture the new types of content viewing.

Online video is still in its early stage, particularly in the field of audience measurements. There are still no established systems or solutions for online viewership measurement, which are accepted by the video advertisers. The lack of measurement starts at the fundamental question – what needs to be measured. At present, there is some consensus on the metrics along which online video can be rated – and how advertisement properties can be charged for such media. Popular options among these are the number of impressions, billed as the cost per thousand impressions (CPM) shown to end viewers; and the number of clickthroughs, billed based on the number of times users click an advertisement. ^[57] However, the effectiveness of these are still under heavy debate, and not yet mature enough for advertisers to switch the multi-billion dollar budgets that they have on TV advertising into online media.

5.2 Mobile Video Consumption Devices – Smartphones and Tablets

From the 1930s until the late 1990s, the medium of consumption of TV content remained relatively constant – the television box. In the last two decades however, this has undergone a drastic change. Starting with the personal computer and the Internet in the 90s, to the smartphones in the mid 2000s, and the tablets in recent years, the medium of consumption of TV content has evolved tremendously.

5.2.1 Growth of Mobile “Smart” Devices

Until the advent of the iPhone, the mobile phone was primarily a device used for telephony use cases. Figure 5.7 below shows the increases level of “non-telephony” activities of users on their mobile phones.

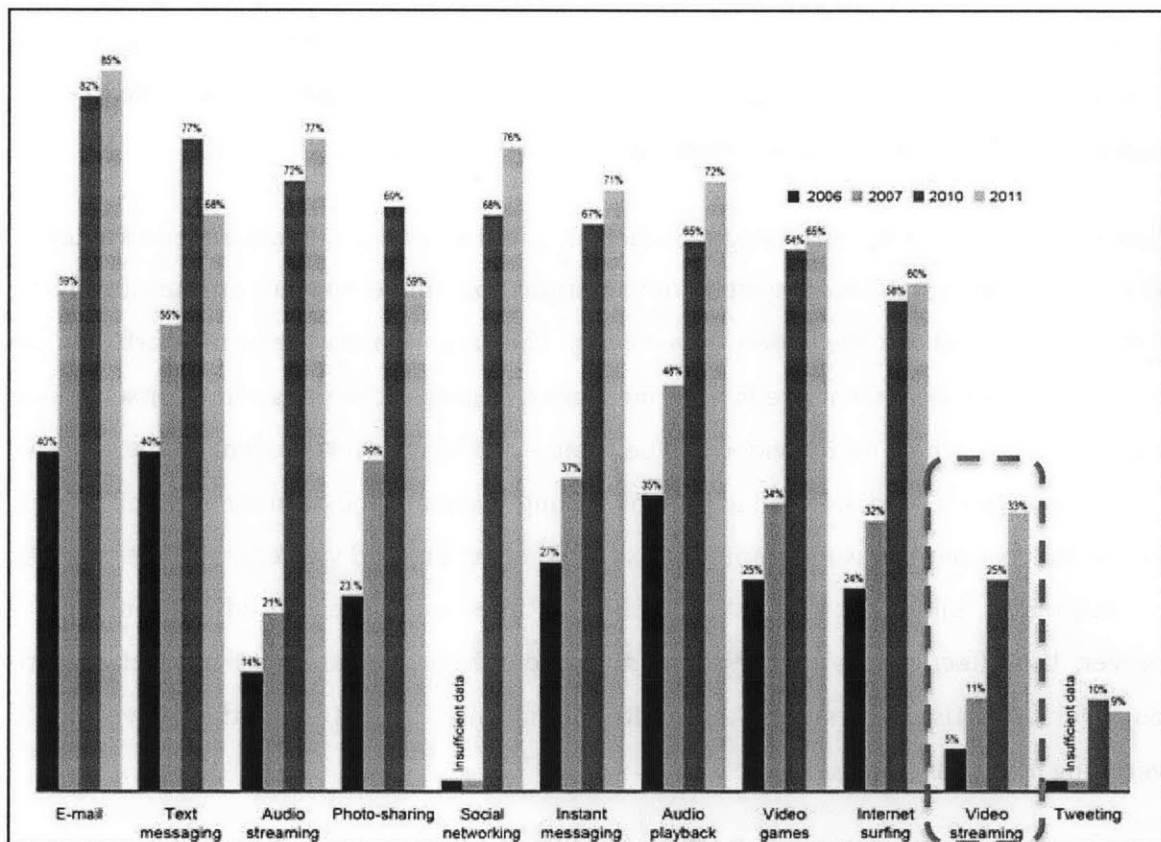


Figure 5.7: Increase in non-telephony mobile use cases (Source: Technology Review)

The US Smartphone penetration reached 74% in 2013, and tablet 52%. This is expected to continue going up to 80 and 64. And this growth in smartphone penetration is being felt in all the eco-systems with which these devices couple – one of the biggest impacts being on online video consumption.

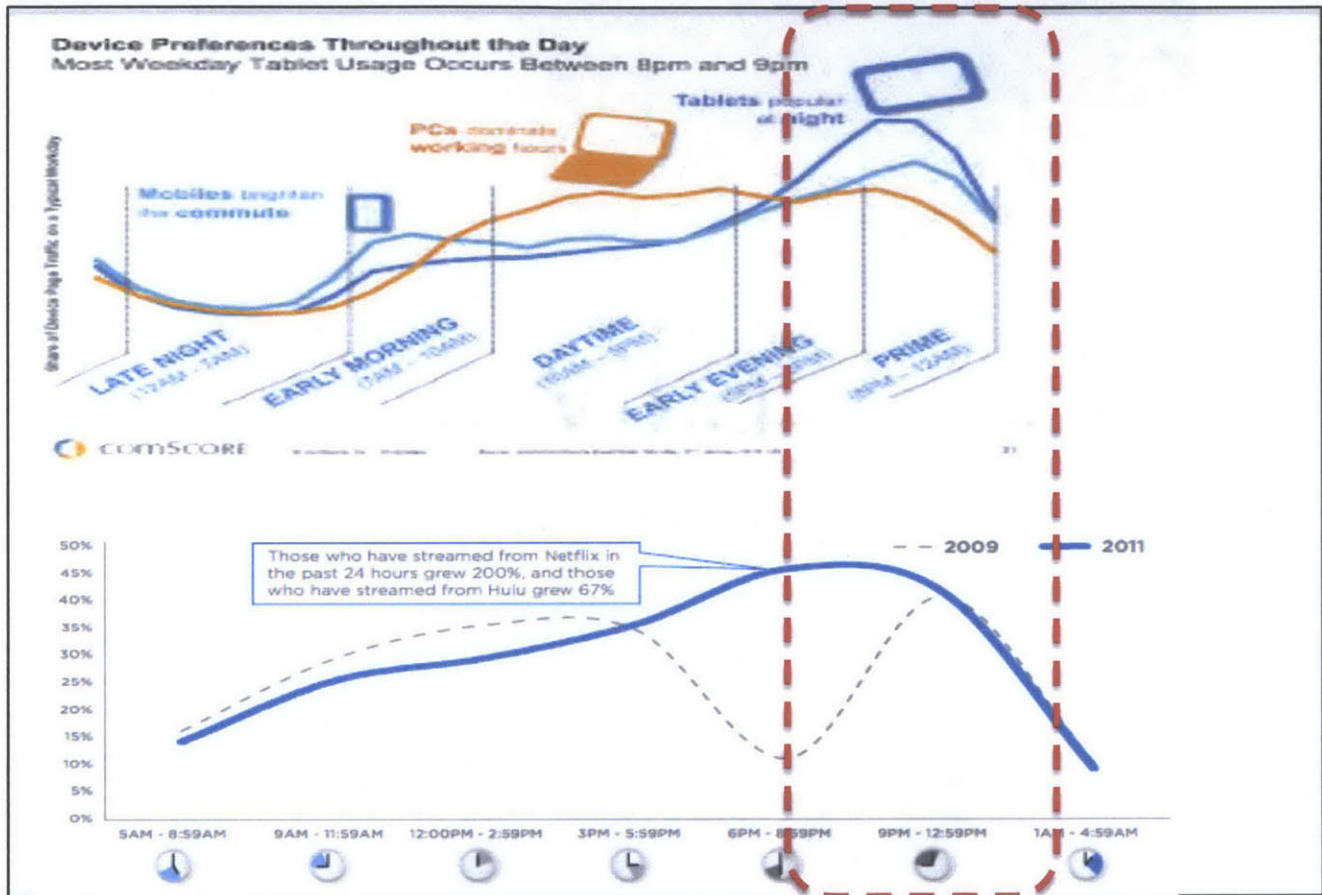


Figure 5.8: Device usage and online video traffic (Source: Yahoo Insights, comScore)

Figure 5.8 maps the usage of tablets, with the online video traffic. These figures here show the overlap between usage of tablets and online video consumption. This overlap gives some circumstantial evidence of the overlap between device usage and online video consumption.

5.2.2 Growth of Mobile Broadband and Video Access

Besides just the growth of smartphone devices, there has also been the corresponding increase in the mobile broadband usage. Figure 5.9 below from Morgan Stanley shows the

rate of adoption of mobile internet, since the launch of smartphones. This data highlights the rate at which mobile broadband usage has been growing over the last few years.

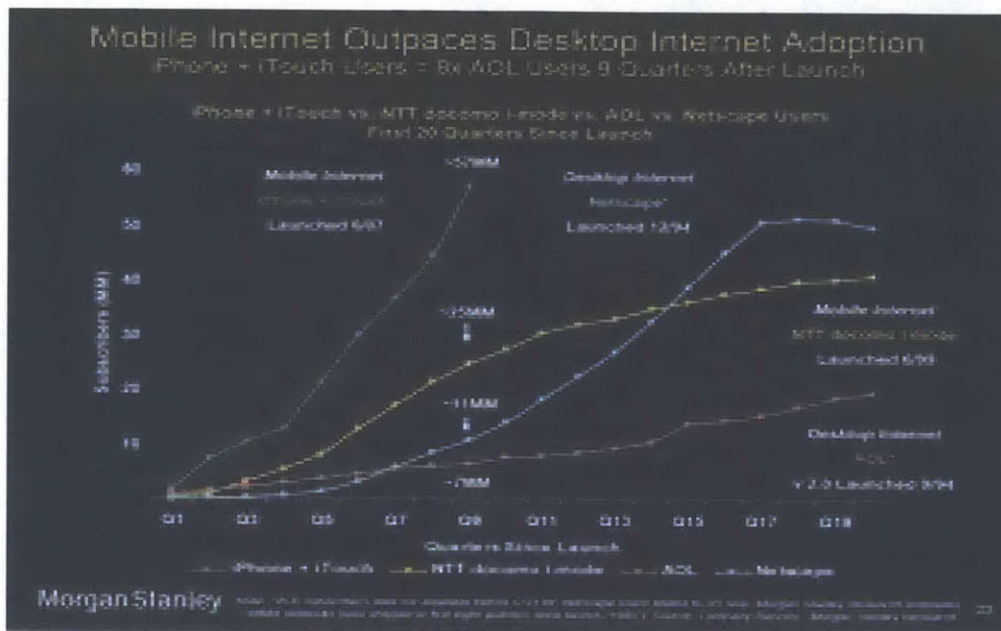


Figure 5.9: Mobile Internet adoption (Source: Morgan Stanley Research)

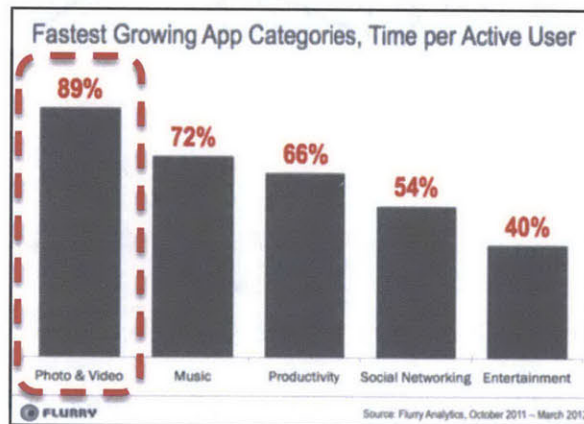


Figure 5.10: Popular Activities on Smartphones, 2012 (Source: Flurry Analytics)

Figure 5.10 also shows that audiovisual applications are the most used apps among smartphone users. This also marked the beginning of a change in the medium used for online video consumption. Nelsen’s quarterly “Cross-Platform Report” reviewing the content consumption across various platforms since 2008 [60], shows the importance of this trend. [61]

Table 5.1 shows the growth in mobile video in the last 5 years. [60][62]

	Mobile Video	Traditional TV
2008	195	7635
2013	331	9128
Growth (CAGR)	11.20%	3.60%

Table 5.1: Change in Minutes per month viewed on mobile and traditional TV

By itself, this data does not highlight the importance of mobile video. However, a detailed look into the age category breakdown of viewership highlights some noticeable trends.

As figure 5.11 shows, the modest growth in traditional TV is largely driven by the 50+ segment, whereas the growth in mobile video can be seen across viewer segments. In other words, there is very little growth in TV viewership among viewers under 50. This highlights that mobile video will continue to grow in importance in the medium term.

Nielsen’s comparison of 2012 and 2013 OTT usage, by access medium^[63], shows that the access volume from computers has actually gone down. At the same time, access from smartphones has more than doubled, and access from tablets has more than tripled.

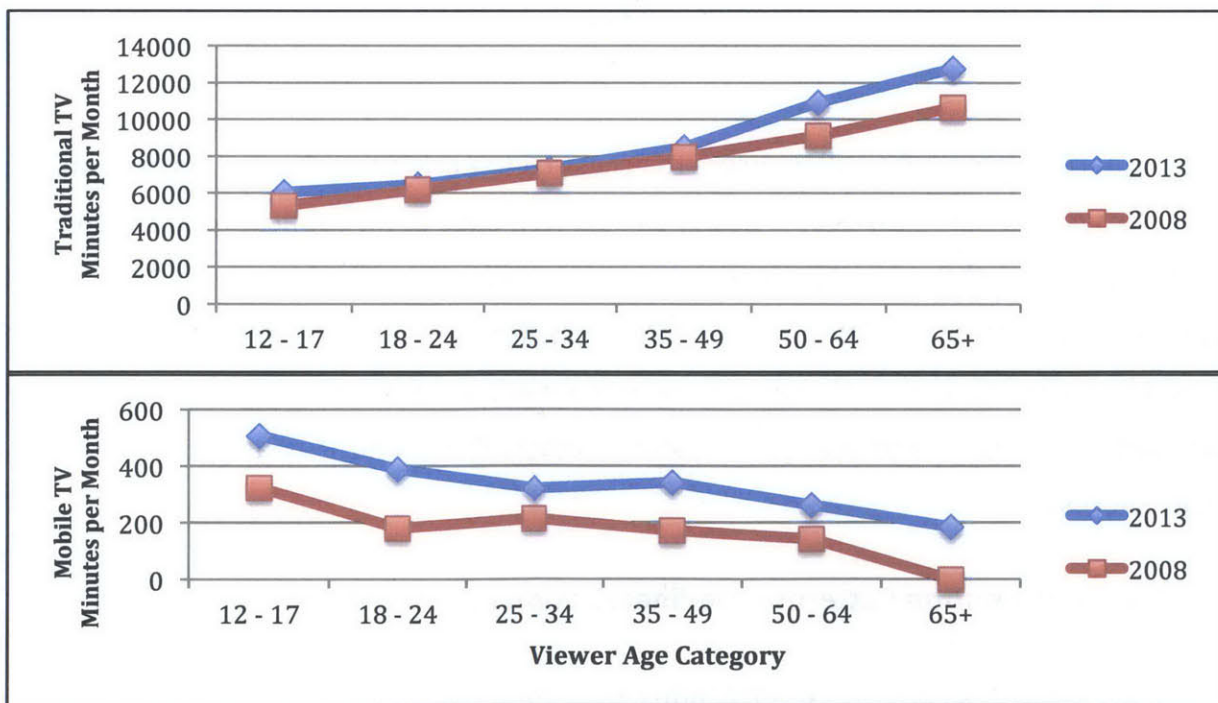


Figure 5.11: Detailed Analysis of Growth in Traditional TV and Mobile Video

5.2.3 Change in Video Viewing Habits and Expectations

Mobile video viewership, combined with online on-demand video, has introduced certain changes in terms of user expectations from video viewing. The most significant of this, is the expectation to be able to access content anywhere and anytime. Mobile video has enabled individualized and personalized scheduling of content viewing. Instead of the traditional primetime viewing, an individual can now watch a 20 minute episode of his favorite series while waiting for his doctor, or while taking the subway to work, or while waiting to pick someone up. Free and popular OTT video services, such as YouTube and Hulu, have made this a defacto expectation among younger users. For subscription based OTT services, such as Netflix and Hulu Plus, the fundamental model allowed an easy transition to provide these use cases. However, this has been a bigger challenge for the traditional cable TV providers.

TV Everywhere: The TV Everywhere initiative is an effort by cable TV providers, to offer content to meet the “access content anywhere” expectation. Proposed by Comcast and Time Warner Cable in 2009, TV Everywhere seems to be the incumbent MVPD companies’ attempt to meet the growing customer expectations to have access to content across devices. [64]

TV Everywhere is intended to allow users to access content that they have subscriptions to, through the web. In many cases, it is designed as a web page or an application that requires authentication, and then provides users access to their subscribed content. As of third quarter 2013, several major MVPDs offer TV Everywhere solutions – with varying levels of content. The performance of TV Everywhere in the market has been mixed so far. There are reports with both optimistic and pessimistic forecasts [65][66] and it is as yet too early to judge its success.

5.3 New Consumption Patterns – De-linearization of Content and Cord Nevers

The third driver that is changing the TV Industry, is the viewer preference away from linear content and toward atomized on-demand content. Traditionally, TV has been a linear

channel. TV Content has also been designed for a linear consumption channel. On demand consumption in the pre-2005 era was largely limited to movies, and this was reflected in the home viewing and rental titles. Since the advent of OTT, the volume of TV content consumed non-linearly has increased tremendously. As mentioned earlier, the fact that 80% of Netflix content views are episodicals (instead of movies) underscores this trend.

5.3.1 Pull Based Consumption and Atomization

Time shifted content viewing has grown at an annualized rate of 16.5%, in the last 5 years^[62]. Once again, a closer look at the data shows that this growth is driven by a growth across the age brackets – indicating a growing interest across all demographics toward on-demand content consumption. In a 2013 research report by Nielsen, about 58% of OTT viewers indicate a preference to view multiple episodes in sequence and curate personalized programming out of title libraries. ^[63]

This has resulted in the emergence and growth of companies providing time shift as a service, such as Aereo ^[67].

5.3.2 The Need for Content Discovery

The move toward pull based consumption has created a new challenge – content discovery. ^[68] In the traditional linear model, content was introduced to users through the linear programming channels. Information about preferences and audiences allowed insertion of appropriate shows at their potential best slots to evaluate their success. Getting the content to the viewer to analyze its acceptance was not difficult. If viewership dropped, it indicated that the level of interest in the content was low.

In a primarily on-demand model, this no longer holds true. The programming of the content is no longer done by an aggregator, but by the viewer. The workaround to this has been through recommendation services, which recommend to a user what titles would be potentially interesting, depending on his viewing history.

This poses two challenges. One, instead of dealing with a few large segments, the recommendation now has to be tailored to each individual. Two, this has to be done for each single viewer. Given that this needs to be done for several million viewers, the solution adopted by the industry has been to automate the recommendation process. The importance of recommendation engines can be seen by the “Netflix Prize” [69], which was a competition run by Netflix in 2009 to identify improved prediction algorithms for recommendation engines.

5.3.3 Cord Cutters versus Cord Nevers

The changing video consumption preferences have resulted in a new group of TV content viewers, the cord-nevers. [70] Cord-nevers is a term used to refer to online content viewers who have never subscribed to a traditional pay TV service or cable. Typically, these are younger viewers (often digital natives) who have grown up in the era of online video and OTT. These are different from cord-cutters, which refers to subscribers of traditional Pay TV services who have decided to discontinue their subscription.

5.3.4 Maintaining ARPUs through Bundling

One of the observations between 2005 and 2012, is that the ARPUs of traditional MVPDs have remained high in spite of competition. Figure 5.12 shows the continued growth in ARPU at Comcast over the past few years.

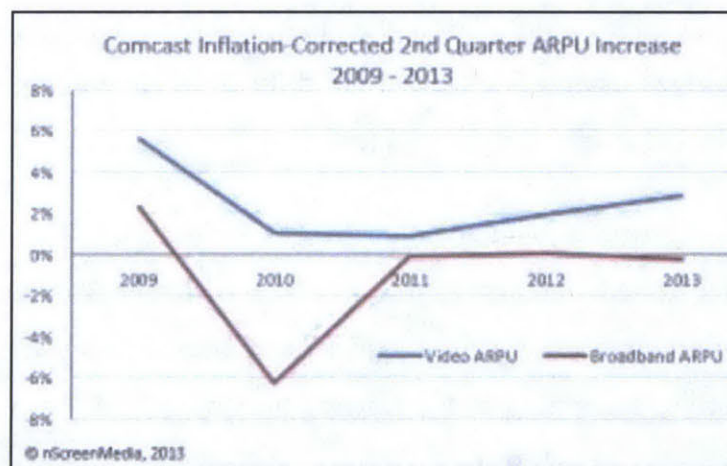


Figure 5.12: Increasing growth in ARPU for video (Source: nScreenMedia)

This has been possible through effective bundling strategies, and value add service add-ons by the MVPDs. [71] Pyramid Research's data shows that Comcast has seen a nearly 25% increase, and Time Warner Cable has seen close to 100% increase, from 2001 ARPUs due to bundling. For the traditional cable companies – this included bundling Internet and VoIP services with their Pay TV service. For the Telco based IPTV offerings, this involves bundling Pay TV, Voice and Internet – marketed as “Triple Play” bundles.

Overall, this has resulted in a higher average price for traditional cable TV subscribers [72] A forecast by the NPD Group predicts that the average MVPD Pay TV bill will rise from \$86 in 2011, to \$123 in 2015, if current trends continue. Thus, cable revenue and ARPU has continued to rise despite stagnant or dropping user numbers. Figure 5.9 shows the quarterly ARPU growth rates for Comcast's Pay TV service, which reflects one of the largest pay TV delivery companies. As the figure shows, not only is the ARPU increasing, the rate of growth of ARPU continues to increase.

From a user perspective, this results in a subscriber paying for a number of channels and programming which is not of interest to the subscriber, for the benefit of having a one stop provider and a unified package for Internet, voice and TV. An example, calculated by SNL Kagan, is the \$5.54 [72] that a subscriber to any basic cable package that includes Disney channels, whether or not he wants to watch ESPN. When this is scaled to 10s of channels similarly bundled in by multiple networks and cable operators, the fees add up.

6. Implications and Opportunities for The Future

The drivers identified in Chapter 5 provide an understanding of what causal mechanisms have been driving the changes observed in the industry. Extending these drivers forward also provides an idea of the implications that these have on the industry in the coming years, and opportunities that these create. This chapter presents these implications in detail. Figure 6.1 presents an overview of these implications.

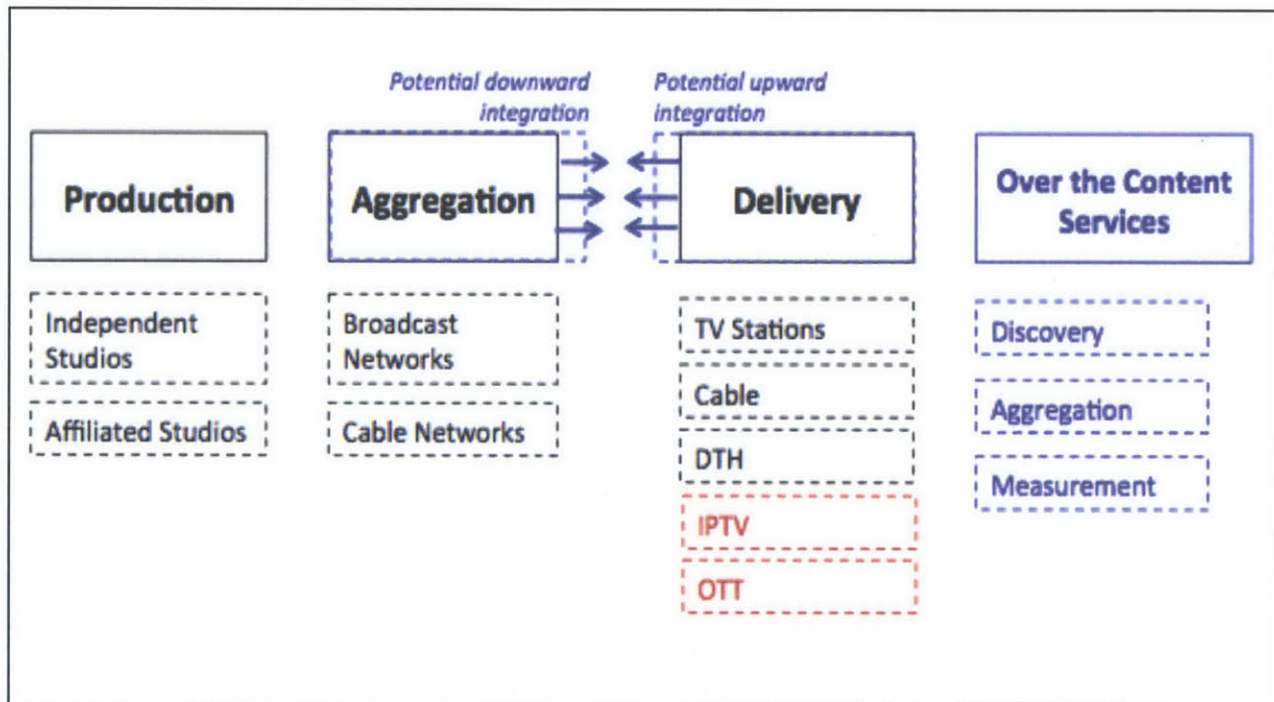


Figure 6.1: Potential changes in the TV Industry in the Near Future

6.1 Growth of “Over The Content” (OTC) Services – Driven by de-linearization

The growth of pull based consumption, and the transition away from the traditional linear model have introduced a new class of services in the content consumption value chain. The lack of a linear programming model, the atomized manner in which viewers prefer to view content, and the need for the industry to connect new content with individuals – all create the opportunity for a layer of services that enable this logical connection. The importance of this is emphasized by a recent research publication by TDGResearch^[73] which shows that Netflix subscribers in the users have passed HBO cable network subscribers. Thus, there are more

people who are outside the linear programming reach of HBO, for publishing their content.

This thesis uses the term “Over the Content” (OTC) services, to collectively refer to these services. Here we explore one specific OTC service in detail – video search and content discovery.

6.1.1 Video Search and Content Discovery

One of area where a lot of activity has been seen in recent years, is in technology enabled intelligent search and discovery of video content. This includes automated analysis of a viewer’s past content views, and prediction of new content that will be interesting to the user. This seems to be a space where technology companies are also heavily interested. As highlighted earlier, the 1 Million dollar Netflix Prize shows the importance attributed to this by Netflix.

Technology companies are seeing this as an opportunity to create a competitive advantage in the media field. In November 2011, Microsoft acquired Videosurf, a startup which focused on video indexing and search service. Videosurf originally provided a website based interface for viewers to search for video content across the Internet. However, the Videosurf.com site is not longer available for public, and there has not been any public announcement regarding how Microsoft plans to integrate it into its offerings. Unconfirmed rumors ^[74] indicate that the technology may be part of the supporting technology used in the Windows Phone 8’s intelligent TV content recognition support.

Growth of content discovery services seems to be in the early phase of its S curve, with no dominant design or standardized workflow yet established. Figure 6.2 shows the entry of new companies into content discovery field, and it has certainly not yet peaked.

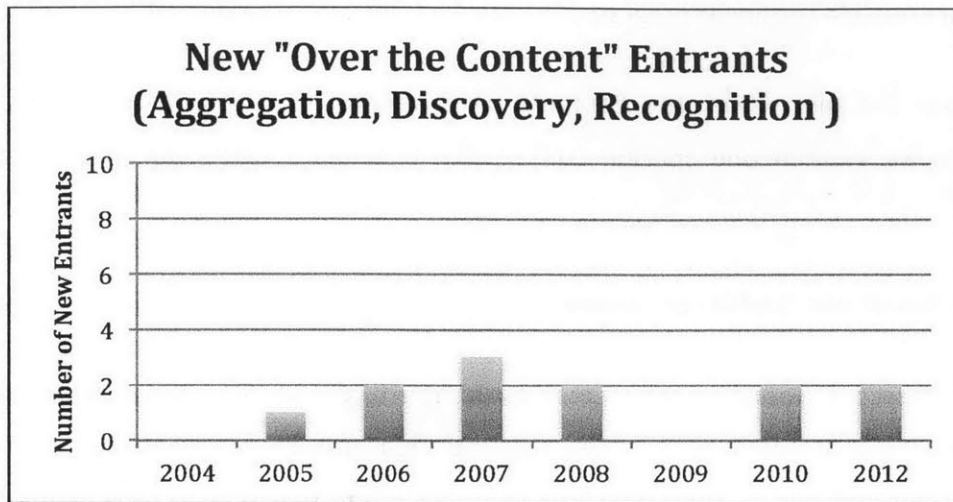


Figure 6.2: Content Discovery Services Company Entry Diagram

Broadly, OTC services can be categorized into the following two categories based on the use case.

User Consumption Analysis and Prediction Engine: These are systems that would track a user’s content viewing and present him with recommendations of new content that he may enjoy. These systems would be used by OTT content providers to introduce new content to users in an effective manner. Industry commentators have indicated that content recommendation drives 75% of content views on Netflix. [75] However, this is a still a maturing field, and lots of improvements are needed.

Video Search: These are systems that would allow end users to find videos of interest across the Internet, across multiple OTT services. These can be thought of as the “TV Guides” of the Internet world. As new entrants enter the OTT arena, such solutions are growing in popularity as it provides users a one stop search location to browse and choose what they would like to watch. One of the early entrants in this field was Ovguide [76], which launched in 2006. Another entrant was LiveMatrix [77] which allowed a search and scheduling system for online content. LiveMatrix was acquired by Ovguide in 2012.

Automated Content Recognition (ACR): Many automated solutions relating to content require the algorithm to know what is the video that is playing. In many cases, the index (or meta data) information is not sufficient to identify the video. Even if the meta data

information has the title, the resolution within the video as to “what” is playing “when” is not available with this. ACR technology enables this recognition through audiovisual algorithms that allow the system to “know” what is on the users screen. This enables many solutions, allowing interactivity, traditional screen to mobile device engagement and so on. Vobile, Audible Magic and Civolution are leading companies in this field. A major showcase of this technology was the 2012 Olympics, for AT&T collaborated with NBC Universal and Shazam to offer users additional live information through an ACR enabled application. ACR has been identified at the CES 2013 as one of the technologies with game changing potential in the field of next generation interactive television.

Over the Content (OTC) solutions is a field which is in its early stages at present, and this is a field where both new entrants and incumbents have a lot of opportunity – as OTT content and on-demand consumption continues to grow. This also presents a strong opportunity for technology companies to enter the value chain with competitive technologies that enable new content discovery.

6.2 New Measurement Technologies for OTT Video Viewership

Section 5.1.8 highlighted the challenges in online video viewership measurement, which have been an obstacle for growth of advertising revenue for online video. This is an area with massive growth potential in the coming years. An accurate and accepted system that measures online video viewership effectively is still missing.^[78]

This poses a huge opportunity for new entrants, given this is a young field and one where media companies and traditional measurement companies are also in the early stage. At present, the spending on online video vastly under paces the amount of viewer time on the new mediums.^[56] Based on current forecasts from comScore, the online video ads market is forecast to reach \$5.2 Billion by 2014. This is still less than a tenth of the ad spending on TV. The data shows that the growth of online video consumption however, is much faster than reflected by the ad-spend numbers. Figure 6.3 shows this trend.

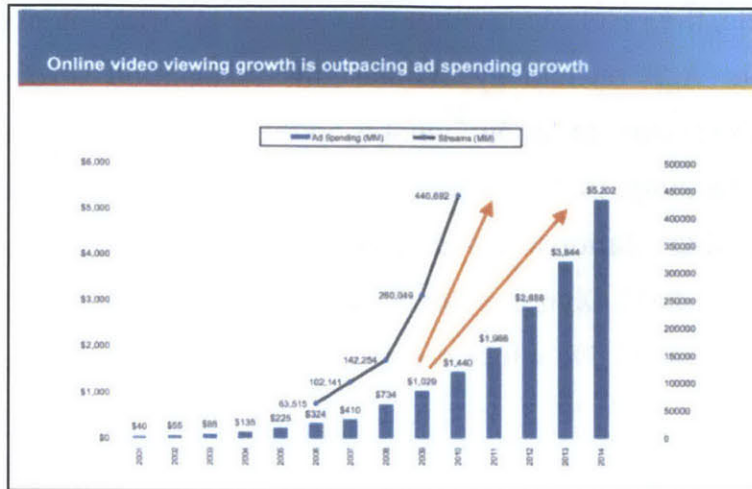


Figure 6.3: Online video growth Outpaces Ad Spend growth (Source: GigaOm)

Again, the primary obstacle preventing speedier growth of online ad spending is the lack of measurability. The lag between the real growth online video views and online ad spending highlights the opportunity for solutions in this domain. Figure 6.4 published by Flurry Analytics, complements this. The data shows that TV ad spending out paces TV usage proportion, whereas web and mobile ad spending lags the usage.

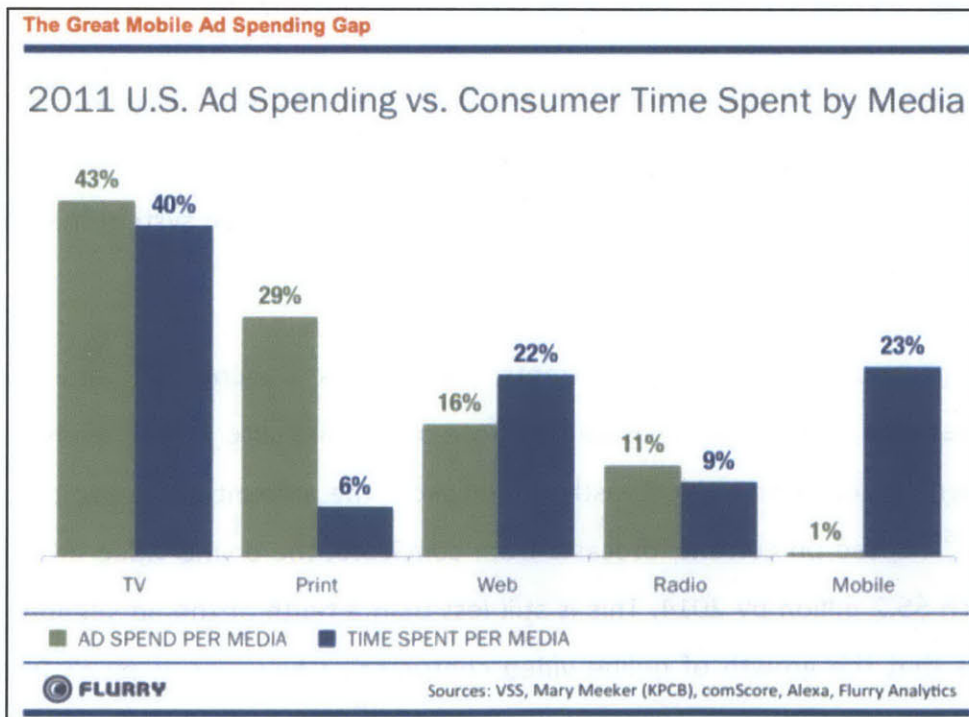


Figure 6.4 Online video growth outpaces Ad spend growth (Source: Flurry Analytics)

The current efforts to standardize efforts in this direction include efforts by IAB, the Interactive Advertising Bureau, to publish digital EV measurement guidelines [79]. Nielsen has its digital program ratings, to extend its traditional measurement services. In addition, digital measurement companies have online video measurement services, such as Video Metrix from comScore. Lastly, there are new entrants with a dedicated focus on online video consumption measurement, such as Ooyala and its online video index. [80] However, there is as yet no established leader or “dominant design” in this field. This one of the opportunity areas for incumbents and new entrants in the industry.

6.3 Atomization and Pressure Against Bundling of Content

The new consumption models, together with on-demand content consumption, have resulted in a strong preference among viewers for non linear and personally programmed content. This trend has been referred to as the atomization or de-linearization of content. [81] Broadly, this refers to the preference among users to view specific titles, episodes, and programs, as opposed to an entire channel or a bundle of programs. [82]

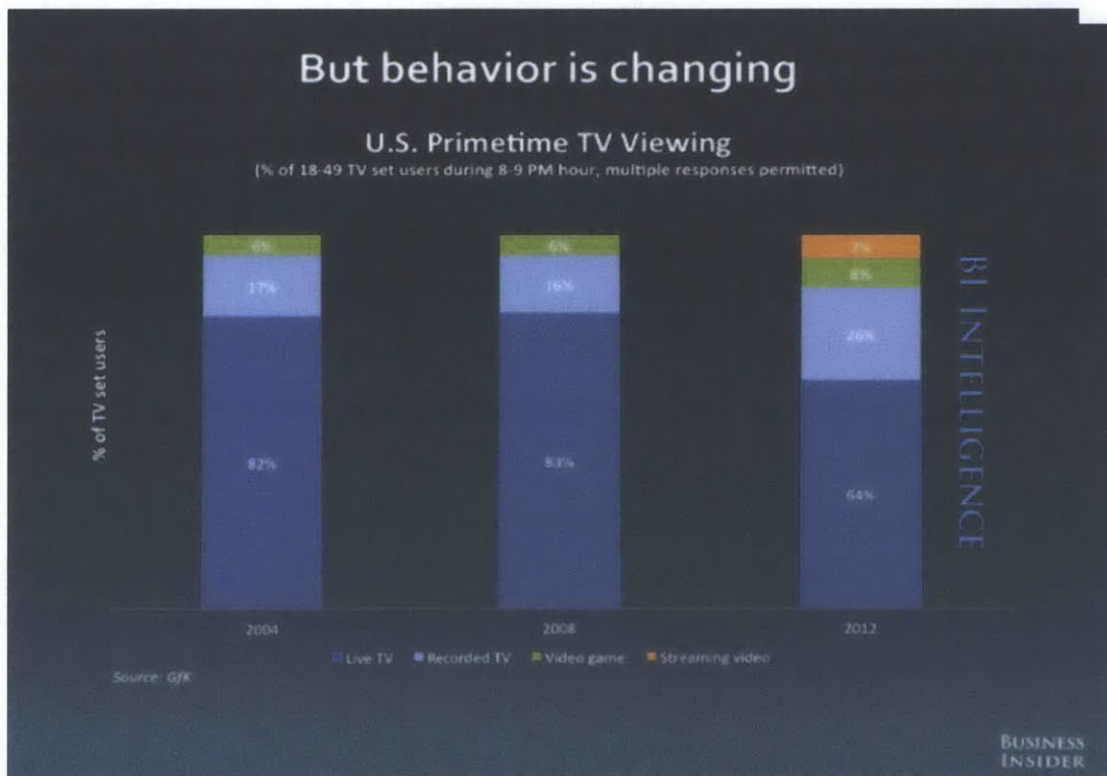


Figure 6.5: Viewer preference for non-linear content (Source: Business Insider)

Figure 6.5 from Business Insider, shows this change in consumer preference, from the larger percentage of viewers who are viewing time-shifted content during primetime instead of live TV programming. This goes counter to the bundling and integration approach by traditional MVPDs to make their offerings competitive and attractive to users. In many cases, this included bundling TV and channel offerings along with other utility offerings, such as Internet, to increase overall profitability and ARPU.

The consumer demand and preference for atomization, and the competition from companies such as Netflix, may pressure incumbent aggregators and delivery companies to convert their offerings into mode atomized, pay for what you view, type of offerings.

6.4 Upward Integration by Delivery Providers – Erosion of Major’s Influence

One of the trends that have been observed since the early 2000s, is the upstream integration by the downstream players. Traditionally, the majors have dominated the upstream activities of production and aggregation, leaving delivery to the MPVPs. The infrastructure providers – cable, telecommunications or ISPs – were not an integrated part of the content delivery value chain. The first major one was the acquisition by America Online of Time Warner in 2001 ^[83], forming AOL Time Warner. Although this is typically seen as a failed merger, it was the first major effort by a downstream company to acquire one of the majors. Another major acquisition, was Comcast and NBCUniversal. Starting with a major stake of 51% in 2011, Comcast acquired 100% stake of NBCUniversal in 2013.

From a value chain control point perspective, an acquisition of an upstream major by a delivery company provides the delivery company access to content rights, which gives them control over the complete value chain. This also provides them the opportunity to build competitive strengths compared to other delivery mechanisms, such as OTT. This thesis does not go into a detailed discussion of the anti-competitive potential that such acquisitions have, and the legal guidelines given to address these issues.

Another example is the change in commissioning of new seasons of TV episodically. Historically, commissioning and first broadcast rights have been owned by the Majors’

networks. In recent times, there has been a shift from networks, to the delivery companies, in the commissioning space. ^[84]. An example is Netflix, which owns several original programs commissioned and first/exclusively run on Netflix - such as Arrested Development Season 4, House of Cards, and Orange is the New Black. The previous effort by Netflix, through its Red Envelope Entertainment ^{[85][86]}, only ran for a few years and was closed down in 2008. One of the reasons suggested by articles was that it created competition and friction with its major suppliers, the Majors. ^[87] The current resurgence of Netflix in this activity may signal a shift in bargaining power in the value chain, with aggregators out bidding and bypassing aggregators for content acquisition.

Other examples of this upward movement are Amazon Studios and Google original content and acquisition of content producers ^[88].

This upstream movement by delivery and infrastructure companies may result in the traditional bargaining power that the major networks held, as aggregators, and result in a gradual assimilation of the aggregation function within the delivery segment. The de-concentration of power in the upstream activities may also offer opportunities for new original content creators to enter the industry, through the new commissioning and acquisition channels.

6.5 Potential Downward Offerings by Rights Owners – Bypassing OTT Provider

A counter trend to section 6.5, is a more recent effort by rights owners and aggregators to move into the delivery space, using OTT channels. The feasibility of OTT has resulted in lower barriers for entry for creation of pay TV delivery channels, making it economically feasible for networks to publish content themselves. One way in which networks are entering the delivery activity, is through their own OTT delivery channels. Pioneering this in 2013 was ABC ^[89], which offered its live broadcast linearly on its iOS app. This would be accessible, under the TV Everywhere framework, to subscribers of their carriage partner MVPDs.

This is also seen as an attempt by aggregators to re-capture bargaining power, by building alternate OTT channels to Netflix. HBO's launch of HBO GO ^[90] to offer their content to end users directly rather than use a third party OTT provider is another instance of a network building downstream capabilities.

Traditionally, the networks area of expertise has been in content acquisition, commissioning and programming. Delivery channels may not be a capability where networks want to invest heavily internally. And this creates an opportunity for new entrants to provide these delivery services "as a turnkey solution" to the networks. One recent entry that is already offering such a service is Nimble TV. Rather than compete with the cable or network companies, NimbleTV allows subscribers of these services to access content over the NimbleTV OTT platform, by authenticating and allowing only subscribers of these services to access the content.

6.6 Risk of Avalanche Decline of Traditional Pay TV Subscribers, Particularly Cable

As discussed in section 5.1.6, there has been a rapid increase in the subscriber based of IPTV and OTT services. This can be largely attributed to their lower costs, and alignment with the emerging consumption trends, particularly in the case of OTT.

Until 2013, the argument against the "cord-cutting" phenomenon was that the subscription numbers do not reflect this trend. However, the recent 2013 subscription change data definitely highlights this change.

The overall drop has been approximately 0.1% across MVPDs. But the drop was almost 1% for cable operators, just in one quarter of 2013. The data highlighted in section 5.2, highlighting the age demographic split of growth in traditional TV viewing, also highlights that traditional TV viewing is stagnant among younger viewers. The growing number of "cord-never" viewers augments these trends.

This is compounded by the increasing costs of cable TV. As shown in section 5.3.4, the revenues and ARPUs within the cable operators have increase in the last 5 years, even

though subscriber bases have remained constant or shrunk. The increased cost of cable TV, and the much lower costs of the newer pay TV services, provide incentive for users to switch to “non-bundled” services without TV.

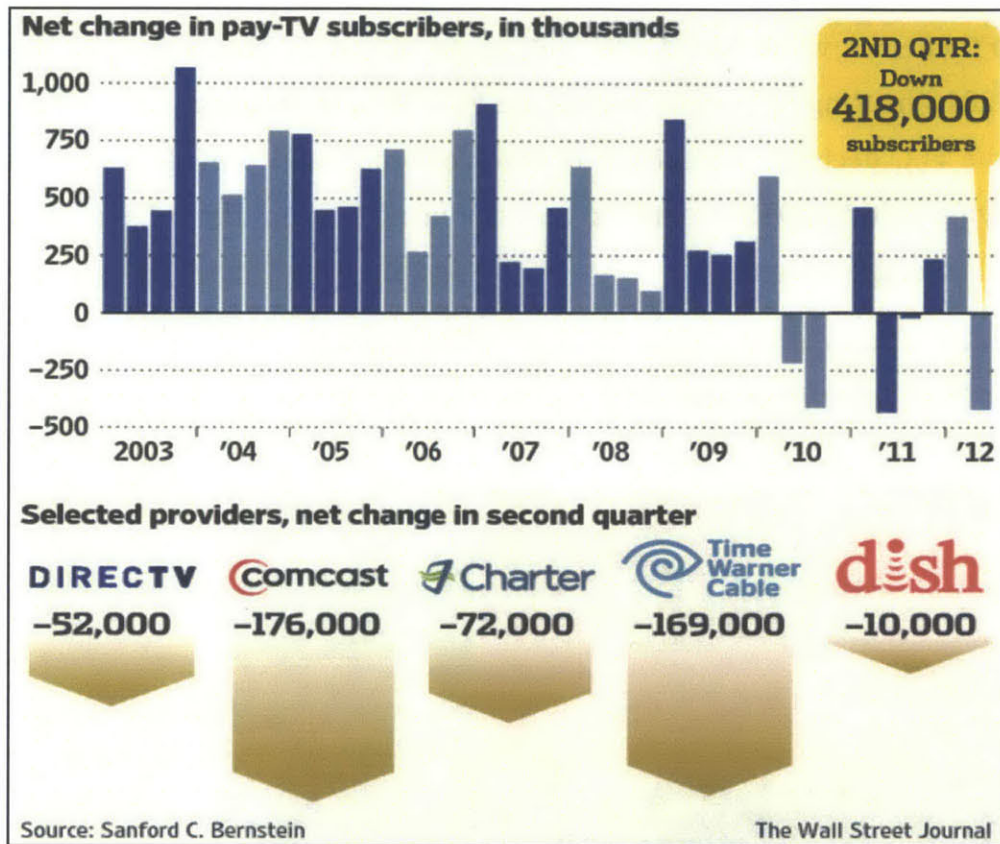


Figure 6.6: Quarterly change in Pay TV subscriptions (Source: Wall Street Journal)

As the figure 6.6 shows, the recent drops in subscriber base may be anecdotal, and continued monitoring of the changes in subscriptions in the coming quarters to see if the subscription drop trend from the last quarter continues. However, together with the other trends and drivers, this definitely looks like a real near term risk.

6.7 Factor to Monitor – Net Neutrality Rules

Netflix currently accounts for about 30% of all US web traffic [92], and Internet video represents over 57% of all traffic. [93] Figure 6.7 shows the composition of the present US Internet traffic, and dominance of video on the Internet pipe.

The crucial infrastructure element required to enable OTT is the broadband infrastructure. There has been on-going debate in recent years, regarding “net neutrality”. Net Neutrality refers to the Federal Communications Commission (FCC) guideline, outlined in the Open Internet Guideline [94] that requires that broadband providers not give preferential treatment to their own value added over the top services over others such as Netflix and YouTube. A 2013 hearing of Verizon versus the FCC [95] is in progress, where Verizon has challenged the FCC decision. A decision in favor of broadband providers can drastically alter the playing field for OTT providers, re-introducing some of the original competitive advantages of owned infrastructure.

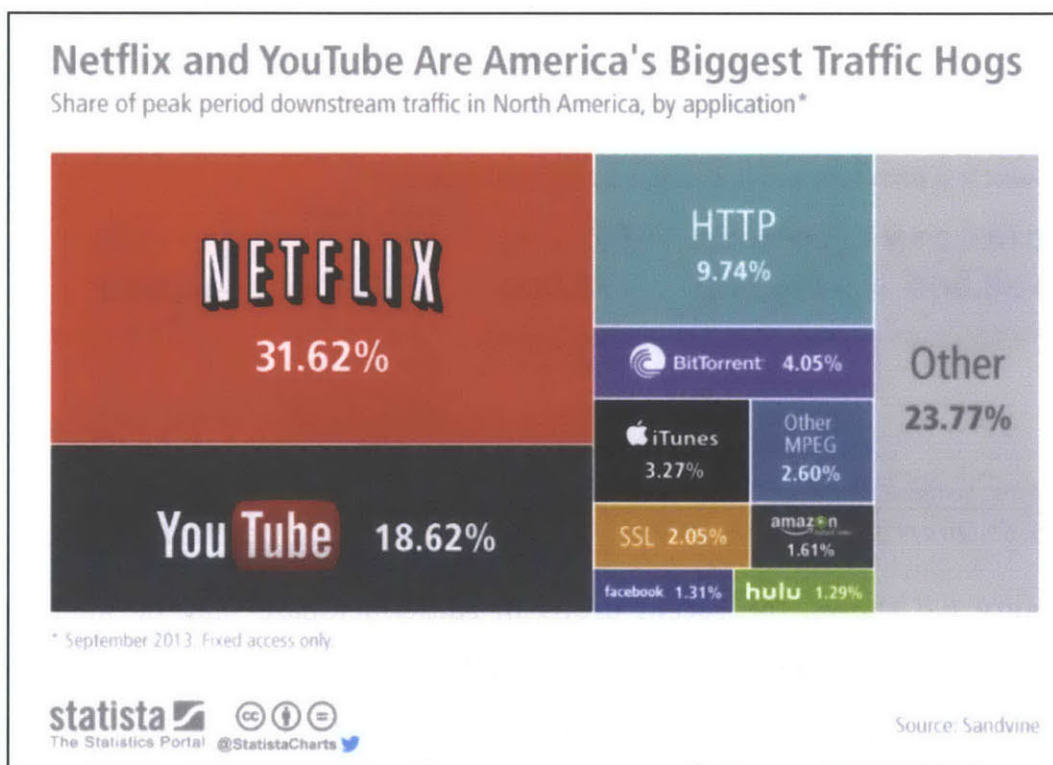


Figure 6.7: Video as a Portion of US Internet Traffic, Sept 2013 (Source: Statista)

Another development in this domain is the entry of Google into the broadband infrastructure domain, with Google Fiber. Although initially planned for Austin, Kansas City and Provo, the 1 Gbps broadband connection is eventually expected to be available across the US.

The availability of an open and unregulated (by the providing agency) Internet broadband connection is crucial for the current major OTT services, like Netflix and Amazon. Thus, developments in the infrastructure domain, and the on-going legal battles regarding net neutrality, are important factors that can affect the growth of these services.

The recent rulings against Net Neutrality ^[96], on 14th January 2014, are a significant threat to the continued growth of OTT however, and the future of evolutions in online video services can be significantly impacted by how the legal framework for Internet regulations evolves in relation to Net Neutrality.

7. Conclusions

The emergence of online video, and the growth of new pay TV providers using online video systems, has reduced the competitive advantage that the big incumbent pay TV operators enjoyed. Combined with the growth of smartphones and tablets, this has changed the consumption preferences of viewers. In the process, online video consumption has created new challenges and opportunities in emerging areas – specifically in the areas of online video measurement and Over the Content (OTC) services.

The big traditional MVPDs, however, continue to see growth in revenues and ARPU, although subscriber bases are dropping. This is due to a combination of bundling strategies and existing user bases. However, a continuation of the disconnection trends seen in 2013 can greatly reduce their ability to negotiate content carriage or advertisement agreements – putting their business at great risk.

The new online video providers have quickly grown in subscriber base, and Netflix today has more subscribers than Comcast or HBO. And this is forecasted to continue growing. This has given the new entrants increased bargaining power in upstream negotiations, and recent years have seen an upward expansion by OTT service providers into aggregation and production activities. This trend may be the beginning of the de-concentration of power in this industry from the majors. As a counter response, some of the major upstream companies – like HBO – are pursuing their own OTT delivery mechanisms, and bypassing a centralized OTT player such as Netflix.

The new challenges and opportunities in the field mark the beginning of a new phase in the TV content industry, which has been traditionally dominated by a few major companies. These are new areas where incumbents do not have a competitive advantage - thus leveling the playing field for new entrants who want to enter the media industry. This, coupled with the increased reliance on high technology solutions to solve the downstream industry's challenges, continues to make this an attractive industry for new entrants with innovative technology solutions.

Prologue

The thesis studied the US TV content industry to understand its structure, and the players capturing maximum value in the pre-online video phase of the industry. The major operators in pay TV delivery were identified to capture most of the value created in the industry. A study of the current state of the industry showed that while players in other activity segments seemed relatively unchanged, several fast growing new entrants have entered the pay TV delivery segment. This has been enabled by the maturity of online video, and OTT video content delivery. Other important factors that contributed to this change are the growth in personal mobile viewing devices (tablets and smartphones) and the shift in content consumption preferences from linear to atomized pull based viewing. Based on these drivers, the following implications for the future of this industry, and the opportunity areas for new capability building, have been identified:

- i. Opportunity for growth of solutions that enable value added services on top of de-linear OTT content, Over the Content (OTC) services.
- ii. Opportunity for new measurement technologies and metrics for online video viewership
- iii. Trend against bundling and toward atomized, de-linear viewership of content
- iv. Trend toward upward integration and migration by downstream players
- v. Potential for downward integration by rights owners, to protect their competitiveness and value capture
- vi. Potential for an avalanche decline in traditional cable TV subscribers over the next few years.

References

1. <http://www.businessinsider.com/cord-cutters-and-the-death-of-tv-2013-11>
2. Patterns of Industrial Innovation, Abernathy and Utterback, MIT Technology Review, June 1978.
3. How Competitive Forces Shape Strategy, Michael Porter, Harvard Business Review, April 1979
4. Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy, Bowman and Amdrosini, British Journal of Management, March 2000
5. The Television and Movie Industry Explained. Where does all the money go?, Strategy Analytics, June 2007
6. <http://www.businessinsider.com/these-6-corporations-control-90-of-the-media-in-america-2012-6>
7. Broadcasting and Cable TV in the United States, Datamonitor, September 2006
8. <http://www.ncta.com/industry-data>
9. <http://www.broadcastingcable.com/news/news-articles/top-25-tv-networks/101377>
10. <http://www.umsl.edu/services/govdocs/wofact2008/geos/us.html>
11. Big Bets for the U.S. Cable Industry: Key Opportunities for Future Revenue Growth, PWC, January 2005
12. Industry Revenue Approximation from National Cable and Telecommunications Association, 2007
13. http://www.tvb.org/media/file/TV_Basics.pdf
14. Over the top Video, Broadcast Engineering, November 2010
15. https://www.att.com/Common/about_us/files/pdf/IPTV_background.pdf
16. <http://advanced-television.com/2013/01/31/dvds-still-largest-revenue-source-for-movies/>
17. <http://www.rapidtvnews.com/index.php/tv-broadcast-revenue-set-to-hit-53bn.html>
18. <http://www.broadbandtvnews.com/2013/06/18/satellite-dth-revenues-to-overtake-cable-tv/>

19. <http://www.usatoday.com/story/money/business/2013/07/14/tv-retrans-fees/2512233/>
20. "Broadcasting and Cable TV in the United States", August 2012, Marketline Industry Profile
21. <http://www.fcc.gov/encyclopedia/retransmission-consent>
22. http://transition.fcc.gov/Bureaus/OSEC/library/legislative_histories/1439.pdf
23. http://transition.fcc.gov/Bureaus/OSEC/library/legislative_histories/1439.pdf
24. http://www.iab.net/research/industry_data_and_landscape/1675/1707493
25. <http://www.deadline.com/2011/12/2011-basic-cable-ratings-usa-still-on-top-history-fox-up-nick-at-nite-tbs-down/>
26. <http://www.deadline.com/2012/05/2011-12-season-network-rankings-fox-still-on-top-but-down-nbc-in-third-cw-falls/>
27. U.S. Subscription Over-the-Top Video Services Subscriber 2013–2017 Forecast, IDC, April 2013
28. <http://www.statisticbrain.com/netflix-statistics/>
29. <http://paidcontent.org/2013/04/30/hulu-surpassed-4m-paying-hulu-plus-subscribers-1b-streams-in-q1/>
30. <http://www.businessinsider.com/amazon-prime-10-million-members-morningstar-2013-3>
31. <http://advanced-television.com/2013/04/11/ott-revenue-up-60/>
32. <http://abovethecrowd.com/2010/04/28/affiliate-fees-make-the-world-go-round/>
33. <http://www.multichannel.com/content/top-20-multichannel-providers>
34. <http://seekingalpha.com/article/1020781-No-Value-In-Netflix-Is-Carl-Icahn-Wrong>
35. http://www.verizon.com/investor/news_verizon_reports_strong_revenue_and_customer_growth_for_verizon_wireless_and_fios_services_in_4q_2012.htm
36. http://www.screendigest.com/news/2013_07_cox_trials_ip_tv/view.html
37. http://money.cnn.com/2012/01/26/technology/att_earnings/
38. <http://www.fiercetelecom.com/story/telco-cable-triple-play-revenue-rise-144b-2018/2013-11-26>

39. http://www.nytimes.com/2012/08/08/business/media/cablevisions-income-beats-analysts-forecasts.html?_r=0
40. <http://www.verizon.com/home/fiostv/>
41. <http://www.nab.org/documents/resources/050809EconofRetransConsentEmpiris.pdf>
42. Adaptation of Audiovisual Contents and Their Delivery Means, Diallo, Moustafa, Hossam, Nicolas, Communications of the ACM. Nov2013, Vol. 56 Issue 11, p86-93
43. <http://www.satmagazine.com/story.php?number=1609810110>
44. Are We in the Middle of a Video Streaming Revolution?, Swaminathan, ACM Transactions on Multimedia Computing, Communications & Applications, October 2,
45. <http://tools.ietf.org/wg/mboned/>
46. <http://www.realnetworks.com/our-story/>
47. http://usatoday30.usatoday.com/tech/news/2006-07-16-youtube-views_x.htm
48. How Youtube Changes Everything, Miguel, Helft, Mansour, Iris, Fortune, Vol. 168, Issue 3
49. <http://seekingalpha.com/article/1097811-amazon-gobbles-up-more-lost-netflix-content>
50. <http://www.broadcastingcable.com/news/technology/ip-connected-tv-devices-set-surge/128167>
51. <http://www.internetworldstats.com/am/us.htm>
52. <http://www.oecd.org/sti/broadband/oecdbroadbandstatisticsjune2005.htm>
53. U.S. Pay TV Subscriber 2013–2017 Forecast, IDC, April 2013
54. OTT takes a nip out of video subscriber numbers, CED Magazine, 2013
55. http://www.iab.net/research/industry_data_and_landscape/1675/1707493,
56. <http://www.streamingmedia.com/Articles/Editorial/Featured-Articles/The-State-of-Online-Video-Advertising-2013-88071.aspx>
57. <http://www.videonuze.com/article/online-video-advertising-s-number-one-challenge-measurement>
58. <http://www.marketingcharts.com/wp/television/data-dive-us-tv-ad-spend-and-influence-22524/>
59. <http://www.nielsen.com/us/en/nielsen-solutions/nielsen-measurement/nielsen-tv-measurement.html>

60. Nielsen Three Screen Report, Nielsen, May 2008
61. <http://tdgresearch.com/nielsen-report-shows-tv-viewing-is-now-in-decline-ott%E2%80%99s-impact-being-felt/>
62. The Cross Platform Report, Nielsen, December 2013
63. <http://www.nielsen.com/us/en/newswire/2013/binging-is-the-new-viewing-for-over-the-top-streamers.html>
64. The economics of online television: Industry development, Aggregation and “TV Everywhere”, By: Waterman, David; Sherman, Ryland; Wook Ji, Sung. Telecommunications Policy. Oct2013, Vol. 37 Issue 9, p725-736.
65. <http://advanced-television.com/2014/01/03/widespread-tv-everywhere-unfamiliarity/>
66. http://www.huffingtonpost.com/andy-plessner/tv-everywhere-is-growing_b_4520299.html
67. www.aereo.com
68. <http://www.rapidtvnews.com/index.php/2013120931230/content-discovery-set-to-become-critical-in-online-video-vod.html>
69. <http://www.netflixprize.com>
70. <http://www.bloomberg.com/news/2013-09-18/how-cord-never-generation-poses-sales-drag-for-pay-tv.html>
71. http://www.pyr.com/bb_aug29_tp.htm
72. <http://www.forbes.com/sites/amadoudiallo/2013/10/14/cable-tv-price-hikes-unsustainable/>
73. <http://tdgresearch.com/netflixs-us-subscribers-passes-hbo-congrats-and-brickbats/>
74. <http://www.wpcentral.com/microsoft-videosurf-and-windows-phone-8-connection-bing>
75. <http://www.businessinsider.com/netflixs-recommendation-engine-drives-75-of-viewership-2012-4>
76. www.ovguide.com
77. <http://www.crunchbase.com/company/live-matrix>
78. Measurement and Modeling of Video Watching Time in a Large-Scale Internet Video-on-Demand System, Chen, Zhang, Liu, Zhu, IEEE Transactions on Multimedia, Dec 2013

79. http://www.iab.net/guidelines/508676/guidelines/dv_measurement_guidelines
80. <http://www.ooyala.com/online-video-index>
81. <http://www.mediaite.com/online/breaking-down-then-rebuilding-the-media-industry-one-atom-of-content-at-a-time/>
82. <http://www.fiberevolution.com/2012/12/the-disaggregation-of-linear-tv-is-accelerating.html>
83. <http://www.investopedia.com/articles/financial-theory/08/merger-acquisition-disasters.asp>
84. <http://www.mindfulmoney.co.uk/investment-insight/investing-strategy/is-netflix-the-new-hbo/>
85. <http://www.screendaily.com/netflix-closes-down-red-envelope-entertainment/4039994.article>
86. <http://www.imdb.com/company/co0187965/>
87. <http://www.hackingnetflix.com/2008/07/netflix-closing.html>
88. <http://www.nytimes.com/2011/03/08/technology/08youtube.html>
89. <http://www.streamingmedia.com/Articles/News/Online-Video-News/ABC-First-Network-to-Offer-Live-Linear-Video-Stream-89588.aspx>
90. <http://screenrant.com/hbo-go-online-streaming-shows-mcrid-104202/>
91. <http://watch.nimbletv.com/faq>
92. <http://www.statisticbrain.com/netflix-statistics/>
93. http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html
94. http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-201A1.pdf
95. <http://www.thenation.com/article/177425/verizon-fcc-and-what-you-need-know-about-net-neutrality#>
96. <http://www.latimes.com/business/hiltzik/la-fi-mh-net-neutrality-20140114,0,522106.story#a xzz2qSiRZgys>