

THE TELECOMMUNICATIONS INDUSTRY AND CORD CUTTING

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ABSTRACT

The telecommunications industry started in the 1830s and has gone through many changes over time. After providing a brief history of the industry, this research study focuses on the current state of the industry, specifically how the cord cutting phenomenon has shaped the industry. Cord cutting is normally applied to the Cable and Pay TV industry. It refers to consumers cutting their subscriptions to expensive Pay TV services and replacing them with streaming TV services. In 2022, the number of Non-Pay TV households exceeded Pay TV households for the first time. This trend will continue in the future. The concept of cord cutting can also be applied to consumers replacing their landline telephones with mobile phones over the past three decades, which will lead to the death of landline telephones eventually! A more recent type of cord cutting is the reduction of the use of mobile phone lines, replacement strategies, and the future of mobile phone lines and numbers.

Introduction

Per the 1996 Telecommunications Act, the government's formal definition of the telecommunications industry is "communications businesses using regulated or unregulated facilities or services and includes broadcasting, telecommunications, cable, computer, data transmission, software, programming, advanced messaging, and electronics businesses" (Black, 2002). In short, it refers to the exchange of information electronically, which consists of voice or audio, text or data, and video transmissions. These transmissions occur via wired phones or copper landlines, mobile devices, such as cellphones and tablets, microwave communications, satellites, radio and television broadcasting, and internet services (Beers, 2023; Chai & Lazar, 2021). Three major inventions have contributed to the growth of the telecommunications industry: the telegraph, telephone, and television.

The invention of the telegraph in the 1830s is often regarded as the beginning of the telecommunications industry. Several inventors created telegraph systems during the decade. In 1837, Sir William Cooke and Sir Charles Wheatstone received a patent for their telegraph system in the UK. In 1832 in the US, Samuel F. B. Morse, an art professor, made sketches of an electric telegraph system. In 1835, he devised a system of dots and dashes which became known as Morse Code that was used on his telegraph system between Washington D.C. and Baltimore, MD., and in 1837 he was granted a patent. The telegraph went through several updates and improvements but was abandoned after World War II due to new technological inventions (McGillem, 2023).

A few decades later, the invention of the telephone in 1876 by Antonio Meucci, not Alexander Graham Bell (Snyman, 2021), was the next big invention in the telecommunications industry (Beers, 2023; Chai & Lazar, 2021). The telephone industry grew very fast, from one telephone in 1876 to 600,00 by 1900, 5.8 million by 1910, and 30 million telephones by 1948. By

1980, there were 175 million telephone connections. To connect all telephones, a network of copper lines, called Plain Old Telephone Service (POTS), was created, and managed by Bell Telephone Company. POTS was the main telephone communication method until mobile telephony was invented (Snyman, 2021).

The first handheld mobile phone was invented by Martin Cooper, a Motorola engineer, and the first call was made in 1973 using a handset that weighed 2.5 pounds and was 10 inches long. No wonder it was called a “brick” (Snyman, 2021). With the growth of wireless networks and technology, mobile phones became popular in the 1990s and early 2000s. Although the first smartphone, called the Simon Personal Communicator, was invented by IBM in 1992 and sold in 1994 with limited capability, Apple is credited with the first smartphone with the launch of the Apple iPhone in 2007. This smartphone included the full internet experience that customers could get on their desktops or laptop computers (Tocci, 2023). In 2019, the fifth generation (5G) of mobile technology was invented (Shein, 2023). It made integrating smartphones, tablets, and other devices much easier and allowed the devices to transmit text data, voice, audio, and video. In 2021, 85% of adults reported they owned a smartphone (Cellular Services, 2021).

In 1928, the television, the third major invention, was realized when the first transatlantic signal was broadcasted from London to New York City by Baird Television Development – this is regarded as the beginning of video transmissions. This evolved into cable television and satellite television services. The Telecommunications Act of 1996 changed the competitive landscape significantly as it allowed traditional telephone companies to enter the cable television market and cable companies were able to offer telephone services. Both types of companies were also allowed to offer internet services to customers. Over the Top (OTT) services, which make use of the internet, were first launched in the early 2000s and drastically changed customer viewing

habits. It refers to any kind of video or streaming media that provides access to movies or TV shows. iTunes and YouTube launched in 2005 and Amazon Video launched in 2006 were some of the first companies to take advantage of internet services. By 2007, Netflix began offering streaming content which was quickly followed by Hulu in 2008 and tv.com in 2009 (Snyman & Gilliard, 2019).

In 2013, Cable TV represented 50% of the multichannel video program distributor market. By 2017, this had all changed, with 59% of US homes equipped with broadband capabilities and using streaming services, such as Netflix. Even though many streaming tv companies have entered the industry, Netflix still claims to have the most subscribers in 2023 with 231 million worldwide (Allen, 2023).

Research emphasis

The telecommunications industry, which includes telephone, television, and internet industries, has gone through several innovations, updates, and significant changes as seen in the brief history above. Cord cutting is one change that has influenced the television industry for two decades now and longer if the pre-cord cutting era that impacted the wired or landline telephone industry is included in the count. This research study explores the history of this phenomenon and provides the current state of cord cutting and predicts possible changes in the future.

Cutting the cord in the television industry

Cutting the cord started in the television industry but several factors set the stage for it. First, MLB Advanced Media (MLBAM), a limited partnership of Major League Baseball that was founded in June 2000, streamed the first baseball game between the Texas Rangers and the New York Yankees on August 26, 2002, on the internet. About 30,000 people tuned in on Real One

Player. It was not a smooth streaming event, but it significantly changed the future of the sports and television industries. In 2003, MLB.TV was launched and has become a regular MLB streaming TV service (Mccaskill, 2022).

Second, the US Congress mandated that all Over the Air (OTA) television signals after February 17, 2009, must be transmitted via digital signals only. Analog signals had to be discontinued. To facilitate the reception of digital signals, all television receivers had to be equipped with a digital tuner by March 1, 2007 (DTV Enforcement, n.d.). OTA TV is free except for a TV and a digital antenna. It is high-definition television with outstanding reception of local news and sports. The negatives are a small channel lineup, lack of technical support, proximity to a broadcasting station, and the cost of channel guides (Oakes, 2022).

Third, the main factor that set the stage for cord cutting was the price of cable and satellite TV services. On average from 1995 to 2015, cable and satellite TV prices rose by 5.8% each year while inflation rose by 2.2% per year (Lovely, 2018a). The average price for these services rose between 2012 to 2022 - from \$395.64 to \$529.52 which is a change of 33.84% or 3.38% per year over the 10 years (Wheelwright, 2022). Inflation has remained at about 2.2% except for 2021, 2022, and January and February 2023 when it averaged about 6.5% per year (Srinivasan, 2023).

Fourth, the development of hardware to make streaming TV easier also laid the foundation for cord cutting. Roku's Roku DVP and the Netflix TV player, the first-generation hardware, were alternatives to a computer screen. Second generation hardware such as Apple TV in 2010, Chromecast and Nvidia SHIELD streaming boxes in 2013, and Fire TV in 2014 facilitated streaming TV.

Fifth, the new business model created by Netflix in 2007 to "watch instantly" changed TV viewing habits. Streaming video on demand (SVOD) service, or the ability to watch licensed

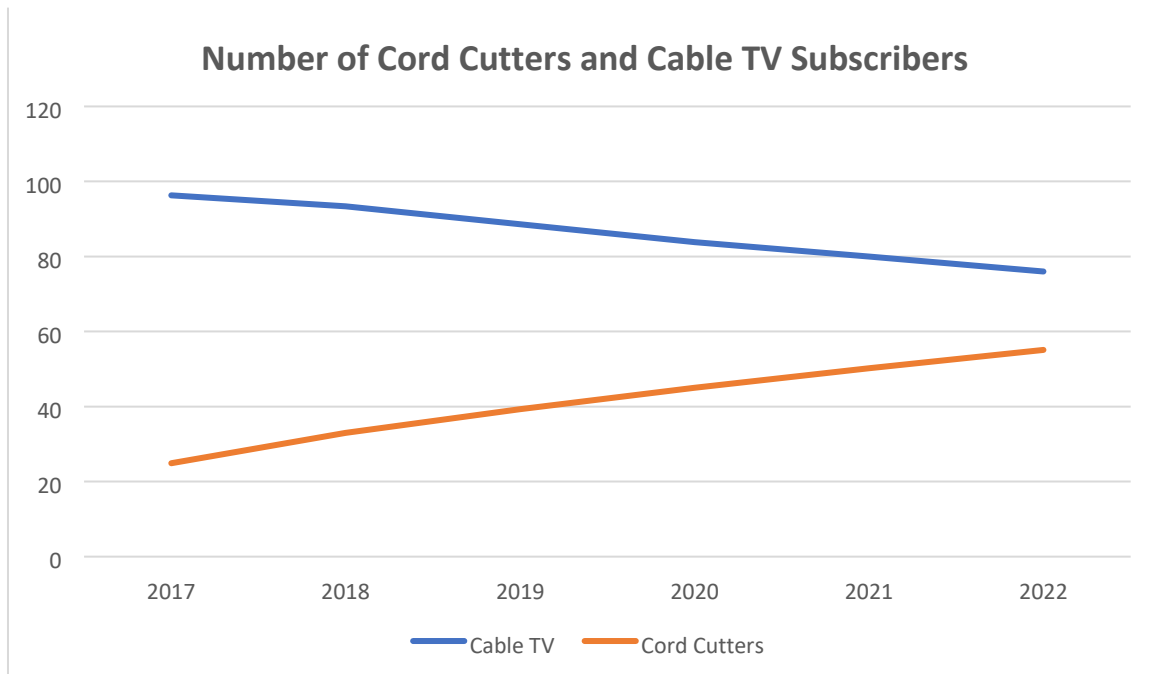
movies and TV shows, made its debut. YouTube started in 2005 but was only for user-generated content. Hulu started the same year as Netflix, Amazon Video on Demand in 2008, HBO GO in 2010, and HBO NOW in 2014 (Lovely, 2023b).

TV cord cutting as a trend took off dramatically in 2015 and by 2020 traditional cable and satellite TV had lost 12 million subscribers (McCarthy, 2023). Cutting the cord, therefore, is a term used to get rid of unwanted TV channels subscribed to from cable, satellite or broadband TV providers and replacing them with streaming TV services (Segal & Isaacs, 2023).

Cutting the Cable and Satellite TV cord versus Streaming TV today

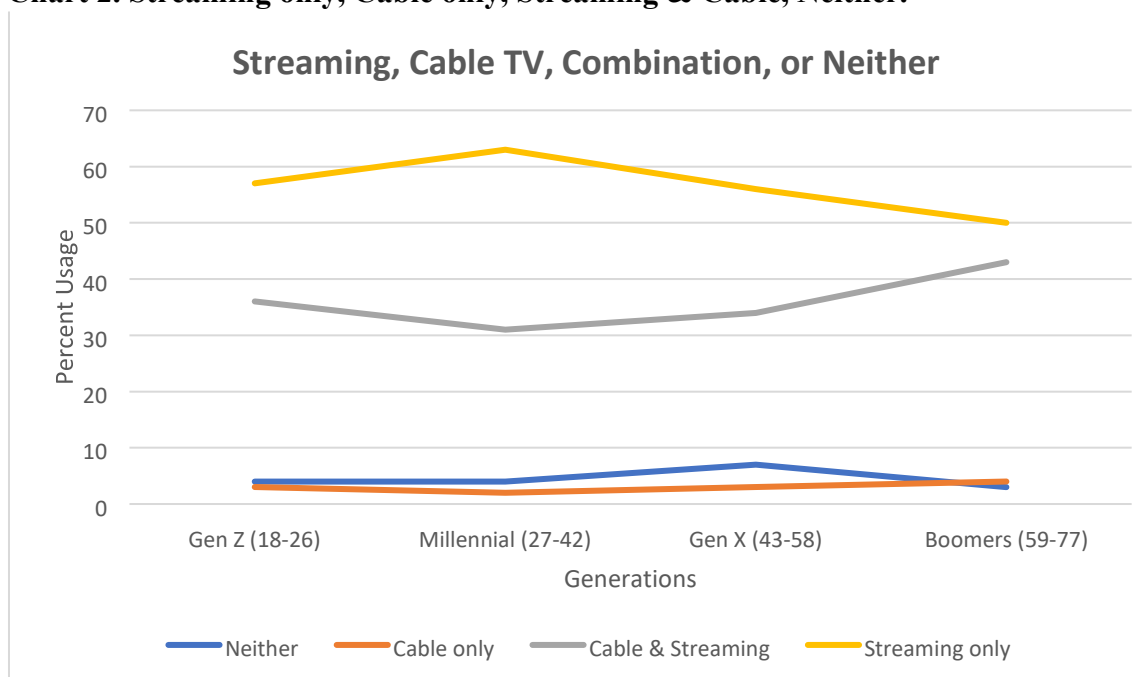
From 2007, when cord cutting started, until the early 2010s, cord cutters were a small minority (Bouma, 2023). However, chart 1, created by data from eMarketer’s Insider Intelligence’s US Cord Cutters (2018) chart and Sirisha (2023), shows, the number of cord cutters more than doubled from 24.9 million in 2017 to 55.1 million in 2022. At the same time, the number of Cable TV subscribers decreased by 20 million.

Chart 1. Number of cord cutters and cable TV subscribers.



Another way to measure growth in TV cord cutting is to use the number of households instead of the number of subscribers. In 2018, Pay TV households were 90.3 million households and Non-Pay TV households, which consist of cord cutters and never Pay TV households, were 37.3 million. In 2022, the Non-Pay TV households surpassed Pay TV households and will continue to increase (Benes, 2022). In a recent study by Lovely (2023b), it was found that 93% of American adults access streaming platforms while only 40% have cable or satellite service. Streaming only is more popular than Cable and Streaming combined. Use of Streaming Only, Cable only or Neither platform across all generations is presented in Chart 2 below from data provided by Lovely (2023b). Millennials are the largest group of streaming users and Boomers are the least number of users but more of them use streaming services as opposed to Cable TV. Streaming only is used more than Cable TV across all generations.

Chart 2. Streaming only, Cable only, Streaming & Cable, Neither.



In 2022, there were 214.8 million streamers and in 2023 there are 240.2 million streamers.

However, one in four customers using streaming services plan to cancel at least one streaming subscription due to a lack of interesting content, price, having too many subscriptions, not enough time to watch, and controversial or offensive content. Among the most popular streaming platforms, more subscribers plan to cancel a service than non-subscribers plan to join. It is reported that 19% of Netflix subscribers plan to cancel while 13% of non-subscribers plan to join; 9% plan to cancel Amazon Prime Video with 9% non-subscribers planning to join; 15% plan to cancel Hulu with 7% non-subscribers planning to join; and 15% of Disney+ subscribers are planning to cancel and 6% of non-subscribers are planning to join. One-third of those planning to cancel cite price as a main reason. Potential subscribers cite 3 areas of content that are attractive: Classic TV shows, live sports, and movies (Lovely, 2023b).

Cutting the landline phone cord

Cord cutting may also apply to copper phone lines or landlines. In 2000 the number of landlines in the US peaked at 186 million customers (Snyman & Gilliard, 2018). Since then, customers have systematically replaced their landline telephones with the newly invented wireless mobile phone (Cutolo, 2023). The decline was so severe that the Federal Communications Commission (FCC) announced in August 2022 that US Telecom companies are no longer required to provide service to their copper landlines (Wasser, 2022). However, this does not mean that copper landlines were abruptly shut down in 2022. As of 2023, 40.35 million US households still have landlines. Most of these households are individuals over 65 years old and businesses (The US landline insights report, 2023). Landlines will therefore continue to exist but will also continue to decline as telephone companies switch landlines to Voice Over Internet Protocol (VoIP). Landline users can keep their phones but will need an internet connection for VoIP, which is more economical with better quality (Burgy, 2022).

Cutting the mobile phone cord

Mobile and smartphones have built-in antennas which are used to send packets of digital information between phones and a cell tower nearby. When phones receive these packets of information, they are split into two channels, voice, and internet protocol or data channels. The reason for the split is to maximize efficiency (Bhatt, n.d.). Mobile network providers have provided both channels in a package deal (i.e., a mobile account) to customers since the mid-2000s when 3G wireless networks made accessing the internet faster and easier than the previous 2G wireless network. The obvious question is whether both channels must be included to have a mobile account? The answer is no. However, network providers like AT&T did not allow customers to have data only plans in the past and still do not in 2023. They use the package deal as a marketing tool to make customers think they get more features for the monthly subscription price they pay for a smartphone mobile account. However, with the development of 4G and 5G wireless networks, technological innovations such as artificial intelligence, the internet of things, cloud networks and gadgets like tablets have made data only plans necessary. AT&T today allows devices such as tablets and laptops to have data only plans (Snyman, 2019). Since no phone line is needed, is mobile phone voice cord cutting happening today?

Mobile phone subscribership and voice calls

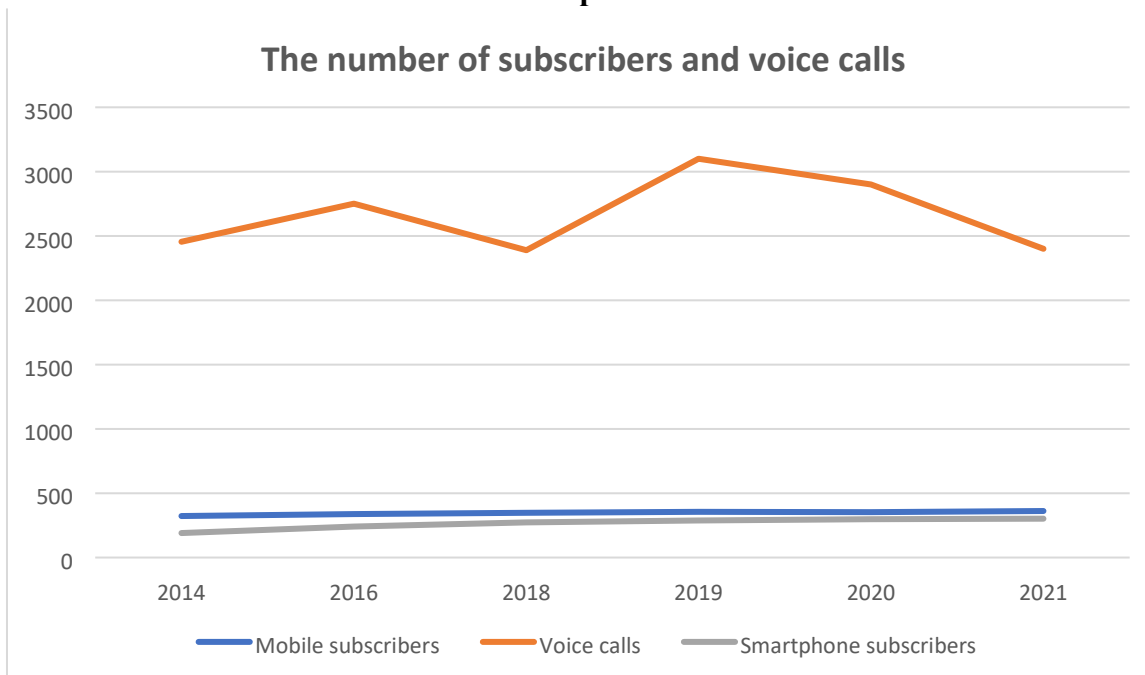
The number of USA mobile phone subscribers, provided by The International Telecommunications Union (USA: Mobile phone subscribers, 2023), and the number of smartphone subscribers, provided in Statista by Degenhard (2023), has been increasing at a declining rate from 2014 to 2021 (See chart 1 below). The number of mobile phone subscribers has been increasing at a rate of 7.8% for 2015 and 2016 each, 5% for 2017 and 2018, 7.6% for 2019, a negative rate of 3.3% in 2020, and an increasing rate of 9.1% for 2021. The number of

smartphone subscribers has been increasing from 2014 to 2021 at a rate of 12% for 2015 and 2016 each, 6% for 2017 and 2018 each, 5% for 2019, 3% for 2020, and 1.8% for 2021. However, the number of mobile voice calls, provided by Knight (2023), grew from 2014 to 2019 at a rate of 9.6% and then declined during 2020 and 2021 by 12.3%. Subscribers are making fewer mobile voice calls while accessing their mobile internet frequently. In fact, according to Howarth (2023), 92.3% of internet users access the internet via their mobile internet service.

Who are the phone cord cutters?

“Please leave a brief message at the beep” is a response that one will get if you call the mobile phone of a millennial or a Gen Z. In fact, 75% of Millennials avoid phone calls and 81% have apprehension anxiety before making a call according to a study done by Turner (2023). Gen Zs grew up when the internet became widely available and are called “digital natives”, like Millennials who are called the “digital generation” (McClure, 2022).

Chart 1. The number of mobile and smartphone subscribers and voice calls.



Voice calls are in billions and subscribers are in millions.

Both generations have also been referred to as the “Mute Generation.” They believe that phone calls intrude on their lives, may lead to unpleasant conversations, and allow callers to be repetitive (Loss, 2022). Millennials or Generation Yers were born between 1981 and 1996 and Generation Zs were born between 1997 and 2012 (Debczak, 2023).

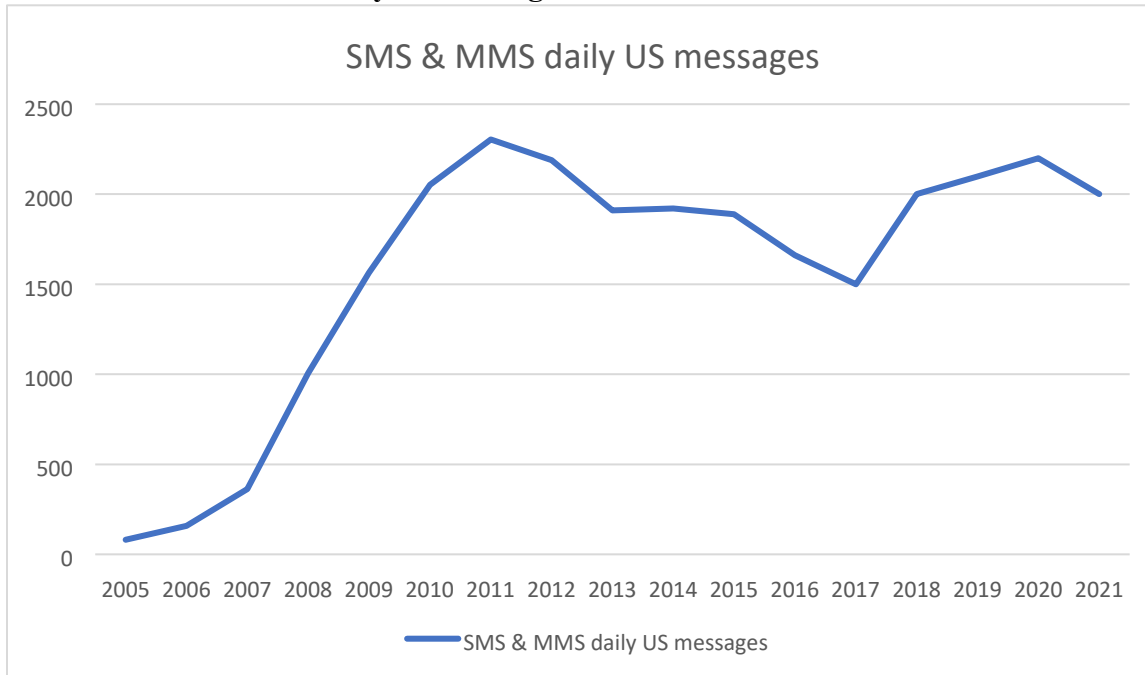
The rapid growth of technology combined with the pandemic of Covid-19 have caused many changes in services provided over the internet. Millennials, Gen Zers, and the newest generations have changing needs that require outstanding cameras, noise-cancelling earphones, and switching seamlessly between devices during video calls. These gadgets are more important than network providers such as Verizon, AT&T, and T-Mobile. The mobile phone number is becoming irrelevant (Vishwanath, 2021)!

Messaging and messaging apps

Messaging over the internet is very popular today and preferred to voice calls. It has many advantages for the users. They believe that one can be professional, informal, and expressive in text messages. Bubble, full-screen, and camera effects are available to change from a normal to a creative message. Tapbacks like thumbs and hearts can be used to respond to messages. An animated personalized handwritten message can be added. Emoticons, emojis, memojis, smileys, stickers, and more are used to express one’s personality, feelings, moods, etc. Messages are shorter, direct, and unintrusive as opposed to voice calls. They work well in a business, family, and friends’ environment (Vishwanath, 2021).

Text messages can be SMS (Short Message Service) messages which have a limit of 160 characters and MMS (Multimedia Messaging Service) messages which can include pictures, emojis, videos, GIFs, and others. Steven Knight (2023) reported statistics on the number of text messages sent per day in the US from 2005 to 2021 (See Chart 2 below).

Chart 2. SMS & MMS daily US messages



Messages are in billions.

The future

Wireless Telecommunications Industry in 2023 and beyond

Between 2018 and 2023 the wireless telecommunications industry had 0% revenue growth and expects to earn \$324.8 billion total revenue in 2023. A 0.4% annual revenue growth rate is expected between 2023 and 2028. Some of the major trends that have been noted in the industry include decreasing use of landlines, businesses needing to differentiate themselves on price and data quality, industry consolidation reaching its limit, and the market becoming increasingly saturated making it difficult for companies to rely on new subscribers for growth (Irigoyen, 2023). Currently Verizon Wireless is the largest company with a 21.9% market share and \$67.7 billion total revenue. Verizon has expanded calling, texting, and data to customers in Ukraine and has waived international calling/texting charges for customers in many eastern European countries. Deutsche Telekom AG holds a 19.2% market share with \$59.4 billion in revenues. In 2022, the

company announced its efforts to realign its social media to communicate with customers more efficiently. It offers business customers an option of renting devices for employees through their Device-as-a-Service program in efforts to help customers integrate sustainability into their businesses. AT&T holds a 17.9% market share with \$55.3 billion in revenues. The company announced the spinoff of Warner Media in 2022 to existing shareholders. AT&T also announced a strategic alliance with Frontier Communications to expand its fiber-optic connectivity (Irigoyen, 2023).

The future of Cable TV cord cutting

In 2022, Benes stated that Pay TV households in 2026 will be 54.3 million and Non-Pay TV households will be 80.7 million, a difference of 26.4 million households. Does this mean that Cable TV will die soon? Probably not! Cable TV companies can create cheaper bundles, cooperate with streaming TV companies, or go streaming themselves. Will cord cutting continue as predicted? Yes, but the future of streaming TV companies is uncertain. Cord cutters are already cutting some streaming TV company subscriptions and will continue to do so (Bouma, 2023b).

The future of mobile telephone lines and the phone number

Network providers such as Verizon, AT&T, and T-Mobile might want to change their business model and separate the mobile telephone line and internet access from each other. They can create an internet access only model for mobile phones and not just for gadgets such as tablets and laptops. The mobile phone line and internet access package deal does not make it more valuable than an internet access only model (Sayman, 2019).

Mobile telephone lines will eventually go silent! Calls can be made over the internet with Wi-Fi calling, FaceTime audio, WhatsApp audio, Snapchat, and many others. Only an IP address is needed to make such a call. A phone number is not needed to make a connection between two

or more devices. Mobile telephones will die or become an ID for a mobile account since it is easier to remember a phone number than an IP address (Snyman, 2019).

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