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Résumé de l'article

The tremendous growth and ubiquity of the Internet in today's world makes access to information much easier than ever before. Many global forums consider access to information as a basic right and an absolute necessity for the sustainable economic development of nations and an indispensable instrument for human growth. Net neutrality is the concept that all citizens should have equal and non-discriminate access to the Internet and networked services, without any restrictions. This paper looks at the history and evolution of the concept of net neutrality and the associated concept of access to information in the context of the United States and India. U.S. and India are chosen since they are both large democracies accounting for the second and third largest number of Internet users. US is the world's largest and mature economy, whereas India is an emerging economy. Both countries are current dealing with the issue of digital divide, and both countries are currently embroiled in animated debates concerning net neutrality and access to information. The paper offers a contrast between the approaches taken by the two countries and the interactions among the government, regulators, the law and citizens. The results of this study could be used as a basis by countries that are embarking on information policy formulations.

Information Policy Interactions: Net Neutrality and Access to Information in US and India

by

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The tremendous growth and ubiquity of the Internet in today's world makes access to information much easier than ever before. Many global forums consider access to information as a basic right and an absolute necessity for the sustainable economic development of nations and an indispensable instrument for human growth. Net neutrality is the concept that all citizens should have equal and non-discriminate access to the Internet and networked services, without any restrictions. This paper looks at the history and evolution of the concept of net neutrality and the associated concept of access to information in the context of the United States and India. U.S. and India are chosen since they are both large democracies accounting for the second and third largest number of Internet users. US is the world's largest and mature economy, whereas India is an emerging economy. Both countries are current dealing with the issue of digital divide, and both countries are currently embroiled in animated debates concerning net neutrality and access to information. The paper offers a contrast between the approaches taken by the two countries and the interactions among the government, regulators, the law and citizens. The results of this study could be used as a basis by countries that are embarking on information policy formulations.

1. Introduction

As the Internet gains an almost ubiquitous status in much of today's world, free and open access to the Internet has become an increasing concern. The World Summit on the Information Society (WSIS), convened in Geneva under the auspices of the United Nations in December 2003, reaffirmed the criticality of free and open access to information in its *Declaration of Principles*. The *Declaration* stated that such access is important to maintain and strengthen *human rights*, to enable *sustainable development* and to enhance the *quality of life* for all. The same year, a Columbia University Media Law professor, Tim Wu, coined the term *Net Neutrality* (Wu, 2003). The principle of net neutrality is that governments and Internet service providers (ISPs) should treat all data on the Internet equally, and not discriminate or charge differential prices to different users. The proponents of net neutrality aim to promote and advance the core principle of open access to the Internet. The argument is that access to information via the Internet is the critical factor that drives innovation, growth and sustainability in today's global economy. Indeed, access to the Internet is increasingly considered a basic right. Net neutrality is at its core a public policy and regulatory issue, and assumes that access to the Internet will be governed by policy and regulations. The issue of net neutrality has gained high import in many countries around the world, and net neutrality debates are becoming more prevalent at present.

This paper examines and compares the progress of net neutrality in the US and India. These two nations are very important and useful in the discussion on net neutrality. Both are large, and at times dysfunctional democracies. The US is a developed, mature economy with the highest GDP (IMF, 2015), whereas India is an emerging economy, with the highest GDP growth at present. The US and India have the third and second largest number of Internet users, respectively. Both countries have enshrined the freedom of expression in their Constitutions. Yet both have significant sections of their populations (albeit to a lesser degree in the US) that do not have optimum levels of access to the Internet. A study of the paths taken by the two with respect to net neutrality will thus offer useful information in understanding the core issues pertaining to net neutrality, historical differences in the approaches taken by the two, the positive and negative aspects of the approaches, and provide a basis for other nations to frame open access or net neutrality policies.

The paper begins by tracing the historical foundations of net neutrality, which is based on the principles of *monopoly franchise* and *common carriage* originating in England. Then the paper traces the gradual evolution of the common carriage concept into net neutrality in the US. The US has a long history with respect to the application of common carriage prior to the Internet era, and the more recent debates on net neutrality after the advent of the Internet. India, on the other hand, does not have that long a history with respect to the Internet as well as net neutrality. However, its stance with respect to this issue, as well as the policy interactions that are taking place at present are very useful and illustrative, especially to understand the issues of net neutrality in a developing nation. Net neutrality in India is therefore addressed next. Finally, the paper concludes with an analysis of the different approaches adopted and results achieved thus far by these two countries on the issue of net neutrality.

2. Methodology

Our objective is to explain transformations in net neutrality in US and India in terms of interactions among various players, civil society, private interests, and technological developments. We explore the interactions that have produced and continue to produce telecommunications policies that address the issue of equal and non-discriminatory access to information to all citizens. We study the history and evolution focusing on interactions among civil society, political and regulatory bodies, Internet service providers, content providers, transnational governance bodies and users. Therefore, our methodology consists of historiographic research, and interviews and published opinions of civil society players and representatives from the industry and academic communities. The historical discussion and governmental views have been excerpted from published policy papers, reports and judgments from court cases.

3. Historical Foundations of Net Neutrality

To understand the justifications and arguments for net neutrality, we need to start at the origins of the concept. The origins of net neutrality can be traced to a 1672 essay by Sir Matthew Hale, Chief Justice of the Kings Bench in the United Kingdom. In that essay, *De Portibus Maris*, he enunciated the concept of *monopoly*

franchise (McAllister, 1930). The essay laid out his case for regulation of a monopoly by discussing the public and private uses of wharves (piers for mooring boats and ships). In those times, a river technically belonged to the king. A wharf owner was a private entity allowed to build a wharf on the river and operate businesses on it. According to Hale, this monopoly position of the wharf owner could not be used to restrict the wharf only to some customers. All citizens should have access to the wharf. Though privately constructed and owned, wharves are, in Hale's words, "affected with a publick [sic] interest" that makes them legitimate subjects of regulation (Hale, 1787).

In this case, the wharf owner became a "common carrier." Under the *monopoly franchise* concept, a carrier may be granted special rights, such as access rights, and in return, the carrier should not discriminate among users, or exclude certain users from the use of the carrier, and the carrier should not charge excessive fees due to its monopoly position (Jones, 1980; Riordan & Sappington, 1987). Thus, as early as the seventeenth and eighteenth century, certain regulations governed and facilitated equal access to certain common resources.

US and the Common Carrier

3.1 Early Telegraph Regulations

The US courts adopted this concept of common carrier as common law in deciding many cases over the last two hundred-plus years. But the ground work for regulating the common carriers in the US was laid in the years following the invention of the telegraph. The telegraph was invented by Samuel Morse in 1838. In 1843, the US Congress funded \$30,000 to construct a telegraph line from Washington, D.C., to Baltimore – a distance of 40 miles. Soon the deployment of the telegraph became widespread, and by 1860s the Western Union Telegraph Company became the market leader. Telegraph lines were laid alongside railway lines, with easements to public lands granted by the government. In addition to its commercial use, the telegraph proved its usefulness during the American Civil War from 1861-1985. Noticing this, US policy makers realized the need to regulate the telegraph, and passed legislation from 1845 to 1879. As early as 1848 the state of New York enacted comprehensive telegraph legislation. The regulatory aspects of the legislation were included in sections 11 and 12. They required service to *all customers*, including other telegraph companies, on a non-discriminatory basis (State of New York, 1848).

3.2 Telephone Regulations

The telephone was patented in 1876 by Alexander Graham Bell, and the Bell Telephone Company was started in 1877. Just as in the telegraph, telephone lines had to be constructed, on easements of public lands leased from the government. Bell later became the American Telephone and Telegraph Company and occupied a dominating position in the industry. It started aggressively defending its business against competition from other independent telephone companies, and refused to sell them equipment or provide interconnections (Burch, 1985; John, 2010). Fearing that this would lead to unequal telephone access to the citizens, the US lawmakers once again enacted equal access laws. In almost all states, existing

telegraph legislation was made applicable to telephone companies. Thus, while telephone companies were given access to use public thoroughfares and exercise the power of public domain, they were also subject to statutory responsibilities just like the telegraph companies.

3.3 Emergence of Regulatory Agencies

An Interstate Commerce Commission (ICC) was set up in 1887 which initially oversaw the railroad industry, but eventually was expanded to include bus services, telegraph and telephones. This was the emergence of a commission set up to regulate telecommunications. Along with many regulations, telephone companies could only merge upon ICC approval. But this last aspect (i.e. governing mergers) seems to indicate that the government was actually beginning to ease some of its own regulations and restrictions on telecommunications companies, and making allowances for mergers to take place under certain conditions.

3.4 Regulating Mass Communication - Radio

The radio was invented by Guglielmo Marconi in 1896, and the first radio broadcasts started in New York in 1907. The Radio Act was passed in 1912 by the US Congress which gave the Department of Commerce (DoC) authority to issue licenses to radio operators. The Act was further strengthened in 1927 with the creation of the Federal Radio Commission (FRC), and more provisions to ensure that the public interest was adequately served by a radio station. This is because just like the telegraph and telephone infrastructure, the 'public' at large own the radio spectrum but individuals could be licensed to use it. Important provisions of the Act were created to ensure that there was *equality of transmission facilities, reception and service*, and that freedom of expression was protected (Sterling & Kittross, 2002; Messere, 1997). Because the number of users seeking licenses exceeded the number of channels available, the Congress chose selection criteria based on the "public interest, convenience and/or necessity" (Messere, 1997).

However, despite all these Acts, the US government did not succeed in fully controlling the growth of monopolies in the telecommunications and mass communications sectors. By 1934, the telecom sector was run primarily by a few "natural monopolies" such as AT & T and Western Union. The US Congress sought to unify the regulating authorities by combining the ICC and the FRC through enacting the Communications Act of 1934, which created the Federal Communications Commission (FCC). The FCC was given broad latitude to establish "a rapid, efficient, nation-wide, and world-wide wire and radio communication service" (Messere, 2002).

3.5 Regulating Television

The television arrived in 1927, and radio companies started television broadcasts by 1928. By the 1950s, cable television was introduced. Regulating television and cable television also became the FCC's bailiwick. Initially, various television broadcasters were using different proprietary standards, requiring different television sets to view programs. In 1941 the FCC convened the National Television System Committee to arrive at broadcast standards. The FCC was also

responsible for granting permission to air advertisements on various channels and granting broadcast licenses. When the telephone companies started offering cable television, the FCC was also concerned with making sure that existing telephone monopolies did not further enhance their positions through cable TV offerings. The FCC was also concerned that since the telephone companies controlled the distribution infrastructure (i.e. telephone poles and conduits), they could exert control over competing service providers. This led to court cases being filed by and against the FCC (McKenna, 1985).

3.6 60 years of the Communications Act and the FCC

The Communications Act was not revised until 1996. By then, technology had advanced exponentially. But during this long period, the FCC had to address several types of new issues. *The original intent of regulations was based on the need to ensure that all citizens were served equally and without discrimination when public goods (e.g. public lands, radio spectrum, etc.) were allocated for use by private entities.* But over time, there were competing interests: The FCC was required to ensure that there was adequate competition while at the same time ensuring adequate freedom for companies to innovate. There was also the issue of freedom of expression guaranteed by the First Amendment of the Constitution, and whether the FCC was enabling or stifling the freedom of expression of corporations through some of its regulatory actions. There were numerous court cases, leading to some momentous changes, such as the break-up of AT&T, cases relating to foreign attachments on telephone equipment provided by companies (i.e. Hush-a-phone (Auerbach, 2009)), extending telephone lines through wireless devices (i.e. Carterphone (McKenna, 1985)), etc. There is a vast body of work detailing the various court cases. Analysts have applauded as well as criticized the FCC's actions over this long period. A range of detailed analyses and viewpoints can be found in the 1985 Special Issue supplement commemorating the 50th Anniversary of the Communications Act of 1934, in the *Federal Communications Law Journal* (*Federal Communications Law Journal*, 1985).

3.7 Internet, Information Explosion and the Telecommunications Act of 1996

By 1996, new technologies such as satellite communications, computer networking and broadband networks were becoming more and more accessible and popular among the public. Inter-networking and the development of the World Wide Web in the early 1990s led to a spate of new companies being formed. E-Commerce started gaining traction. The telecommunications industry as a whole was enjoying tremendous growth. Congress decided to overhaul the Communications Act of 1934, which was seen as cumbersome and outmoded. The newly rewritten legislation was called the Telecommunications Act of 1996 and was passed on February 1, 1996. President Clinton signed the bill into law on February 8, 1996. The new law made several changes to existing regulations in radio and television broadcasting; cable television; telephone services; Internet and online computer services; and telecommunications equipment manufacturing.

The new Act placed more emphasis on *enhancing competition in the industry as a way to spur the development of new services* in broadcasting, cable, and telecommunications. It also reasserted the role of Congress as the main

policymakers in telecommunications. The Act required the FCC to dismantle several of the oversight rules that were specified in the Communications Act of 1934. President Clinton stated that the new Act would “stimulate investment, promote competition, (and) provide open access for all citizens to the Information Superhighway (The Museum of Broadcast Communications, n.d.)”

Many public interest groups protested what they saw as a substantial weakening of FCC, and power gains by special interest groups and the industry. They argued that the weakening of regulations, especially with respect to media ownership and the public interest aspects, would enable a few media companies to completely control the market. This would in turn cause a digital divide, as many parts of the country would be deemed to be of low market value, from a revenue generation point of view. It would also lead to discrimination in the type and quality of services made available to the public at large.

3.8 Common Carriage evolves into Net Neutrality

Timothy Wu, a professor of media law at Columbia University is credited with coining the term *Network Neutrality* or *Net Neutrality* in 2003 (Wu, 2003). He defines the term in the web site <http://www.timwu.org>: “Network neutrality is best defined as a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites, and platforms equally (Wu, n.d.)” Ever since Tim Wu’s enunciation of net neutrality, the concept has gained tremendous attention among legal scholars, activists, and academics. Many debates have ensued between Internet activists and corporate lobbyists, politicians and university professors, and between minority groups in rural locations and large governmental agencies in urban settings. Net neutrality battles have also been fought in courts and in the media. It is also actively discussed at universities and in churches. Yet there has been no decisive victory for any one side yet, or even a resolution. The term remains vague, and is often misused or misinterpreted. *Basically, it is important to note that net neutrality is in principle the same concept as the “common carrier” rules of earlier times – that a common carrier who has been given certain special access to public goods should be required to grant equal access to all citizens, without any discrimination.*

So in the era of the Internet, the term “net neutrality” refers to the principle that Internet Service Providers (ISPs) should not block or slow down Internet traffic from competing content providers with a view to speed up their own content, or charge differential pricing based on the content or geographic location of the consumer. This is especially in view of the fact that the ISPs and cable operators have been granted special right-of-way access to public lands or other concessions by the government. According to Susan Crawford, a professor of Law in at Harvard Law School, and President Barack Obama’s Special Assistant for Science, Technology, and Innovation Policy in 2009, the Internet “is like water, electricity, sewage systems: Something that each and all Americans need to succeed in the modern era (The Freedomist, 2009).”

3.9 Net Neutrality Battles and Unsolved Issues

These pro-net neutrality stances have been opposed by many in the telecommunications industry and by those who adhere to strict free-market philosophy and believe that regulating net neutrality will curb innovation and competition. They have filed lawsuits in opposition to a FCC 2005 “Broadband Policy Statement” which listed some consumer entitlements, such as access the Internet content of their choice [without restrictions], etc. The FCC stated that this was to “encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet (F.C.C., 2005).”

The anti-net neutrality camp has had some important victories. In 2005, incumbent ISPs successfully lobbied with the FCC to repeal their categorization as “common carriers,” as that categorization required them to grant bandwidth to new ISPs at discounted rates (Corley & Stephens, 2010). In another case, in 2008 the FCC barred Comcast from using certain peer-to-peer management techniques that would in effect slow down other traffic. But this action by the FCC was rejected by a Washington, D.C. appeals court in 2009.

Since 2005 several US legislators have tried to pass laws that would affect net neutrality. Many of these have been killed by Congress. Bills that have managed to pass, such as Texas Republican Joe Barton’s “Communications Opportunity, Promotion and Enhancement Bill of 2006” (COPE) have provisions that actually weaken net neutrality.

In 2008, the FCC issued an order prohibiting Comcast, a major ISP, from resorting to certain network management policies that throttled peer-to-peer data transmissions by customers. Comcast filed a legal appeal against the order, and in 2010 the US Court of Appeals – D.C. Circuit vacated the FCC order by holding that the FCC did not have any jurisdiction over Comcast, as Comcast was not deemed a common carrier. This was followed by another setback for the FCC in 2014. In 2010 the FCC issued a set of regulations called “FCC Open Internet Order” that aimed to formally establish net neutrality concepts. One of the orders was to ensure there was no blocking or unreasonable discrimination in providing Internet access. However, Verizon appealed against this order, and the US Court of Appeals - D. C. Circuit vacated the order in 2014 (US Court of Appeals - D.C. Circuit, 2014). These two cases are considered a major loss to net neutrality proponents and a victory to those opposed to the concept.

In November 2014, President Barak Obama entered the fray and made a speech urging the FCC to take up strong rules to protect net neutrality. As of this writing, the tussle between the proponents and opponents of net neutrality continue without any clear decision or result. However, if one were to go by the court rulings, the opponents have won clear victories. Thus what started as a policy to enforce and regulate “common carrier” communications providers so as to provide all citizens with equal access to information has now become an issue of pro- and anti- free markets, and whether such policies will constrain or enhance innovation.

In the following sections, we study the history and approach that India has taken in the quest to achieve net neutrality.

4. Net Neutrality and India

The Indian experience on net neutrality offers notable contrasts with that of the US discussed above. Firstly, India was under British colonial rule for almost two centuries, from 1757 to 1947. This colonial experience has deeply influenced and shaped India's telecommunications policies in pre- and post- colonial times. Secondly, post-independence policies have tended to have socialist leanings, with the state playing an important role in laying down policies. The focus has been towards national development and poverty reduction. As in the case of the US above, we start with a brief historical account of telecommunications policies and trace how those have evolved into net neutrality policies.

4.1 The Arrival of Telegraph and the Indian Telegraph Act of 1885

In 1848, James Andrew Broun Ramsay, Marquee of Dalhousie (1812–1860), also known as Lord Dalhousie, was appointed the governor - general of India by the East India Company. His mission was simple: to unify India, a land of numerous kingdoms, and control it. Under him, the first telegraph lines in India were laid in 1851 by the British government. These were mostly installed near Calcutta, which was then the headquarters of the British government in India. The British rulers were primarily interested in telecommunications as a *law-and-order maintenance tool* (Headrick, 1988). There was no question of public interest. The governing apparatus of the colonial rulers planned, constructed and controlled the telegraph systems.

The importance of the telegraph in asserting the authority of the British became apparent during the Indian Rebellion of 1857, when a group of Indian soldiers serving under the East India Company rebelled against the British, and rapidly captured large areas controlled by the British (Hibbert, 1980). Many accounts mention the use of the telegraph by the British to quickly relay information on the movements of the mutineers, and the uprising was eventually subdued. The British government passed the *Indian Telegraph Act in 1885*, whereby it retained "exclusive privilege of establishing, maintaining and working telegraphs (IndiaKanoon.org, n.d.)."

4.2 Arrival of the Telephone and Benign Neglect of the Telephone after Independence

Less than five years after the Bell Telephone Company was set up in the US, in 1881, a British firm, The Oriental Telephone Company, brought the first telephone service to India. A few other firms were also granted license to operate telephone services in urban centers until 1944 by the British government (Mann, n.d.). At the time of India's independence in 1947, these firms had set up 321 telephone exchanges, mostly in five Indian cities, 86,000 working lines and 338 long-distance public-call offices. The telephone density (teledensity¹) was a *very low* 0.25 (Mody, 1995). Telephones also came under the Telegraph Act of 1885.

At the time of independence, the Indian government decided that its telegraph and telephone systems would be a government monopoly administered by its own

¹ Teledensity is the number of telephone connections for every hundred individuals living within an area.

civil service (Menon, 1999). Thus, at the time of independence, all foreign telecommunications companies were nationalized to create the Posts, Telephone and Telegraph (PTT) a state-run monopoly run by the Department of Communications. In doing this, the central government retained complete control of telecommunications, a legacy of British colonial rule.

After independence the Indian leaders embarked on a socialist model of development which imposed harsh restrictions on foreign imports. The focus was on complete self-reliance. Anything foreign was considered with suspicion. Under the PTT monopoly, telephones were not considered as an essential service. Rather, it was considered to be a luxury. New telephone lines were added only to cities and metropolitan centers. The service and maintenance were poor. International connectivity was poor. A 2003 report of the International Telecommunications Union shows that in 2002, the PTT had a waiting list of over 1.6 million for telephone connections (Goodrick, 2003). During the years of the PTT monopoly, rural telecommunications infrastructure underwent a benign neglect. This was partly because of the enormous cost of developing infrastructure in rural India, and partly because of the rural populace's low level of economic development, which severely undercut such a population's ability to pay for telecommunications service. Thus vast sections of the Indian populace did not have any access to information even four decades after independence.

The situation became a vicious cycle. Lack of economic development reduced the ability of the populace to pay for communications services, and without revenues, and lackadaisical support from the government, the telecommunications sector went into a state of benign neglect. The situation began to change only in the early 1980s when the Indian leaders, faced with acute balance of payment issues, finally realized that the years of socialist economic policies were not working and that the Indian economy had to undergo liberalization. The economic liberalization policies started in the 1980s also ushered in liberalized telecommunications policies.

4.3 Tentative Steps Towards Corporatization: The DOT, MTNL and VSNL

The first steps to enhance access to information to the vast Indian public were taken in 1985, when the Department of Telecommunications was created, separate from posts and telegraphs. This was followed in 1986 by the creation of the Mahanagar Telephone Nigam Limited (MTNL), a public-sector "corporation" to run the telephone services in metropolitan areas such as Delhi and Mumbai. The Videsh Sanchar Nigam Limited is another public-sector corporation, was also created 1986 to run international telecommunications. But these corporations were still controlled, directly or indirectly, by the DoT.

4.4 Top-down Telecommunications Development

In 1994, the National Telecom Policy was announced. The expectations of the industry were however, dashed, as much of the nation's telecom developmental work was left under control of the DOT. Private industry was relegated to take up supplementary work of telecom development. The DOT imposed strict conditions on private enterprises getting into the telecom sector with a view to ensuring a balanced

telecommunications growth, especially growth in rural areas (Bagchi, 2000). While this was not such a good deal for private telecom companies, it is clear that the government wanted more role in ensuring rural development through more access to information. This is almost similar to the early US attempts to regulate telecom, except that in India, the private sector's role was not much apparent at this time. Some of the conditions in the National Telecom Policy 1994 included (from Bagchi, 2000):

- The private entity had to be a joint company formed with the participation of an Indian company
- Licensees must give at least 10 per cent of all lines to rural areas
- The licensee's network must cover all the districts in the area within 24 month
- Prices charged by the DoT (where it was the competitor) would be ceiling for the prices that private sector firms could charge; of course, they had the freedom to charge a lower rate

While such regulations had national development in mind, they did not in any way enhance innovation driven by market competition. The situation was almost diametrically opposite that of the US approach. The unrealistic policies discouraged several private enterprises from entering the telecommunications market, and as a result, rural telecommunications access suffered the most.

In an attempt to remedy the situation in 1997, the Telecommunications Regulatory Authority of India (TRAI) was set up as an independent arbitrary authority to manage and influence the telecommunications industry. TRAI was granted the power to regulate and oversee all telecommunications matters, and thus enjoyed power over the DoT, which was until then the telecommunications policy-maker.

4.5 The New Telecom Policy of 1999 and Gradual Liberalization

In 1999, a new Telecom Policy was announced. The aim was to start afresh, as prior policy changes had not brought forth the liberalization or the increase in teledensity as expected, especially in rural areas. The objectives of the new National Telecom Policy (1999) were, as noted by Bagchi (2000):

- Provision of universal service to all uncovered areas, including rural areas
- Create a modern telecom infrastructure taking into account the convergence of IT, media, telecom
- Transform telecom sector to a competitive environment providing equal opportunities and level playing field for all players.

The policy also set several landmarks and targets to be achieved in the next ten years, such as (Bagchi, 2000):

- Telephone on demand by the year 2002
- Teledensity of 7 by 2005 and 15 by 2010
- Telecom coverage of all villages by 2002

- Increase rural teledensity from 0.5 to 4 by 2010
- Internet access to all district headquarters by October 2000
- Internet access to all villages by 2002

The new policy certainly attracted more private sector interest. However, the private sector was moving rapidly towards wireless telecom. This trend started in 1991, when the DOT started issuing licenses to private companies offering wired and wireless services. The private companies, no doubt realizing the enormous infrastructure that would be required to bring wired connections to rural India, chose to focus more on wireless telecom. Thus, the old paradigm of land-line telecom rapidly began to be leap-frogged. Numerous private companies started to get into the telecom sector as a result.

In 2000, the government realized that TRAI had to be reconstituted, with more powers and independence. By this time, deregulation of Indian telecommunications was really beginning to happen. Wireless service providers have begun to proliferate in the Indian telecommunications arena. National teledensity rates started to increase rapidly, as can be seen from the chart (Figure 1) below.

As can be noted from Figure 1, by March 2015, India's rural teledensity was an impressive 48.37, and overall teledensity was 79.38. However, as the figures show, much of the improvement has come from wireless penetration rather than wired penetration. This was possible only because private companies were allowed to operate in the telecom sector starting in the early 1990s. It is arguable that if private companies were not allowed into the telecom sector, the government-run enterprises would be focused on developing the previous generation technology, namely wired telecommunications. However, it should be noted here that the private telecom operators do not have a "free ride" absent of all regulations. In fact, Indian private telecom operators continue to operate under strict targets and regulations especially with respect to the number of customers and regions served. Licenses to operate are issued by the DOT. But despite that, the scenario in India clearly differs markedly from that in the US.



TELECOM REGULATORY AUTHORITY OF INDIA

New Delhi, 12th May, 2015

(www.trai.gov.in)



Highlights of Telecom Subscription Data as on 31st March, 2015

Particulars	Wireless	Wireline	Total (Wireless+ Wireline)
Total Telephone Subscribers (Million)	969.89	26.59	996.49
Net Addition in March, 2015 (Million)	9.31	-0.13	9.19
Monthly Growth Rate	0.97%	-0.48%	0.93%
Urban Telephone Subscribers (Million)	555.71	21.47	577.18
Net Addition in March, 2015 (Million)	-1.56	-0.01	-1.57
Monthly Growth Rate	-0.28%	-0.06%	-0.27%
Rural Telephone Subscribers (Million)	414.18	5.12	419.31
Net Addition in March, 2015 (Million)	10.88	-0.12	10.76
Monthly Growth Rate	2.70%	-2.22%	2.63%
Overall Tele-density*	77.27	2.12	79.38
Urban Tele-density*	143.08	5.53	148.61
Rural Tele-density*	47.78	0.59	48.37
Share of Urban Subscribers	57.30%	80.73%	57.92%
Share of Rural Subscribers	42.70%	19.27%	42.08%
Broadband Subscribers (Million)	83.68	15.52	99.20

Figure 1. TRAI Highlights 2015

4.6 Broadband in India

India got its first Internet connection in 1986, through the ERNET project. But Internet access was restricted to certain academic and scientific institutions and government agencies. Public Internet services were first rolled out in India in 1995 by the government-run VSNL. However, for the first ten years, Internet connectivity was spotty, and the connections were very slow, and restricted to 56Kbps dial-up connections. Despite that, Indians, especially in urban India, flocked to use and experience the Internet wherever they could find a connection. Internet cafes mushroomed in the mid-1990s.

The government formulated a comprehensive broadband policy in 2004. It defined broadband as "an always-on Internet connection with download speed of 256 kbps or above (TRAI, 2010)." The policy thus laid out the licensing requirements for private operators who were interested in providing broadband services. This paved the way for the entry of private Internet service providers. However, the Internet penetration was still lower than government expectations. This was due to the fact that the last mile to the customer was still controlled by the government-run BSNL and MTNL. Nevertheless, Internet penetration started increasing rapidly from 2005 onwards. There were 0.18 million broadband connections in March 2005. This increased to 10.3 million by September 2010. Internet-based commerce was beginning to accelerate.

In 2010, 3G and 4G spectrum was auctioned in India to wireless providers. The auctions were very successful, and in September 2010, Tata Docomo became the first wireless operator to provide 3G services in India (Press Trust of India, 2010). Wireless broadband access completely changed the climate for Internet in India. E-Commerce started to flourish. By 2015, broadband subscribers were numbered at 120 million (TRAI, 2015), and India has rapidly become the country with the second largest number of Internet users in the world, with over 375million users (Internet World Stats, 2016).

4.7 The Net Neutrality Debate Comes to India

The tremendous growth of wireless services and wireless broadband in India over the last decade has greatly increased the economic prospects of rural areas and the rural populace. It is greatly reduced the urban-rural divide. There was not much discussion of the concept of net neutrality, because the government had always actively regulated and set rules for private companies to operate in the telecom sector. The government routinely set targets with respect to the areas and the number of (rural) customers served and licenses were granted or revoked based upon the results achieved. As a result, the private telecom operators have always operated under very low profit margins, depending upon volume for their profits and growth.

However, this situation started to change by 2012. The private wireless operators began to notice that customers started using Internet-based apps like WhatsApp, which was covered by their data plans, to conduct voice conversations. The CEO of Bharti Airtel, the largest wireless operator in India, began to suggest that Internet companies like YouTube should pay interconnect charges to wireless companies. Later, the company suggested that companies like Facebook and Google should share revenues with wireless service providers. But these suggestions did not see any results. Then the situation changed in 2014, when Airtel, announced additional charges to customers for making voice calls (VoIP calls) using Internet-based applications such as WhatsApp and Skype. The company clearly saw a decrease to its own voice-based revenues through these apps.

This led to a big outcry in India, and charges that Airtel was violating the principle of net neutrality began to circulate. In response, in March 2015, TRAI released a formal consultation paper on *Regulatory Framework for Over-the-top (OTT) services*, seeking comments from the public. The paper provided a long list of over-the-top (OTT) services that might fall under the category that could be charged separately by wireless providers. The TRAI statement indicated that it did not see Airtel as violating net neutrality and that it was not illegal, as there was no legal framework for net neutrality in India. The intent of TRAI was to ask the public for comments. However, its tone was widely criticized by the public, activists, academics and politicians alike, who saw TRAI as caving to Airtel's proposal to charge differential fees and for seeming to provide a formal vehicle to achieve it.

In response to all the criticism, on February 8, 2016, TRAI released a statement prohibiting discriminatory tariffs for data services. This ruling hailed been hailed by the world-wide Internet community.

5. Analysis and Conclusion

The above discussion has attempted to discuss the concept of net neutrality, and provide a comparison of net neutrality discussion in the US and India. Net neutrality is a very important concept that directly affects access to information, which in turn affects the development and growth of nations and the well-being of citizens. In order to maintain sustainable growth, it is critical to enhance and maintain net neutrality.

It is clear from the above discussion that the two countries have approached net neutrality in diametrically opposite ways. In the US, early attempts to regulate telecommunications has gradually met with opposition from those who perceive such regulations to be against free-market principles and a constraint on innovation. However, proponents and analysts such as Tim Wu note that innovation and regulation need not be a zero-sum game. The court victories by opponents of net neutrality seem to come with threats such as the potential to engage in discriminatory service practices. This would go against the basic principle of common carriage, whereby a monopoly franchise is granted use of a public good and is in return expected to provide services without any discrimination. But the court rulings are not likely to end the discussion on net neutrality any time soon, and more protracted battles are likely to ensue in the future.

In India, the focus has of the government has always been on national development, education, and poverty reduction, rather than enhancing free-market. To that end, the Indian government formulated socialist-leaning policies over the years, only to find limited success. Success was in fact achieved only after restrictive policies were relaxed and private operators were allowed to enter the telecommunications sector. But with the tremendous new growth in Internet and the Internet service providers, issues similar to those in the US are beginning to appear, in the form of demands by wireless ISPs to be allowed to enhance revenues through differential pricing for services. These attempts have been put on hold by the most recent ruling by TRAI. But it is likely that there will be challenges to this ruling in the future. It is important for India to enact laws that will accommodate its developmental needs while also allowing for free-market and innovations to flourish in the private sector.

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