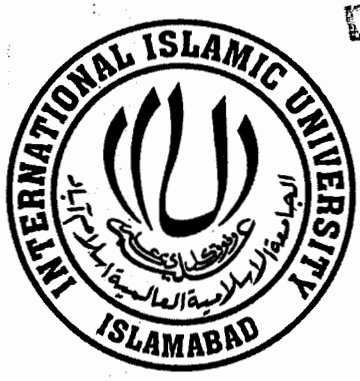
Competition through Interconnection in Pakistan's Telecom Market



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LL.M IN INTERNATIONAL TRADE LAWS

THESIS

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LIST OF ABBREVIATIONs

FAB	Frequency Allocation Board
GSM	Global System of Mobile Communication
ITU	International Telecommunication Union
LDI	Long Distance International
LL	Local Loop
LRIC	Long Run Incremental Cost
MCA	Monopoly Control Authority
MRTPO	Monopolies and Restrictive Trade Practices Ordinance
NASA	National Aeronautial and Space Administration
NTC	National Telecommunication Corporation
POI	Point of Interconnection
PSTN	Public Switches Transmission Network
PTA	Pakistan Telcommunication Authority
PTC	Pakistan Telecommunication Corporation
PTCL	Pakistan Telecommunication Company Limited
RIO	Reference Interconnect Offer
SMP	Significant Market Power
SRO	Statutory Notification
T&T	Telephone & Telegraph Department
WTO	World Trade Organization

INTRODUCTION

As telecommunication markets have opened to competition, the number of networks and services in many developing countries have grown. If the users of these different networks are to take full advantage of the resultant diversity and enjoy unhindered, transparent communication, the networks must be interconnected[1].

Where there is more than one operator, interconnection is currently the only way to connect the different telecommunication networks so that all users can freely communicate[2].

The complexity of interconnection has given rise to a variety of definitions, and demands a significant regulation effort in the form of a telecommunication law. As a starting point, interconnection may be said to be the sum of all the commercial and technical arrangements which operators and service providers use to connect their equipment, networks and services so as to provide their customers with access to the customers, services and networks of other service providers[3].

According to the World Trade Organization (WTO), interconnection refers to "linking with suppliers providing public telecommunications transport networks or services in order to allow the users of one supplier to

[1] Introduction to Interconnection and Access by Dr. Zouakia Rochi. (Ch. A Page-4)
[2] Ibid.
[3] Ibid. (Ch.A1-page 4)

communicate with users of another supplier and to access services provided by another supplier, where specific commitments are undertaken"[4].

Under the provisions of the European directive of 30 June 1997, interconnection means "the physical and logical linking of telecommunications networks used by the same or a different organization in order to allow the users of one organization to communicate with users of the same or another organization, or to access services provided by another organization. Services may be provided by the parties involved or other parties who have access to the network"[5].

According to International Telecommunication Union, interconnection is comprised of those commercial and technical arrangements by which service providers connect their equipment, networks and services so that their customers can have access to the customers, services and networks of other service providers[6].

These different definitions make it clear that successful interconnection must guarantee the interoperability of telecommunication networks and services.

[4] http://www.wto.org. (5.12.2006)
[5] http://www.ec.europa.eu/index en.htm (5.12.2006)
[6] Ibid.

CHAPTER NO. 1

TELECOMMU NICATION IN GENERAL

With reference to Pakistan Telecom Market, "Telecommunication Service" cab be defined as a service consisting of emission, conveyance, switching or reception of any intelligence within, or into or from, Pakistan by any electrical, electro-magnetic, electronic, optical or optic-electronic system, whether or not the intelligence is subjected to rearrangement, computation or any other process in the course of the service[7].

In order to regulate the establishment, operation and maintenance of telecommunications systems and provision of telecommunication services in Pakistan, Pakistan Telecommunication Authority was established under the provisions of Pakistan Telecommunication (Re-Organization) Act, 1996[8].

One of the functions of the Pakistan Telecommunication Authority is to regulate competition in the telecommunication sector and to protect the rights of consumers and it is empowered to provide guidelines for, and determine, the terms of interconnection agreements between licensees where the parties to those arrangements are unable to agree upon such terms[9].
In exercise of its powers above mentioned, Pakistan Telecommunication Authority had issued Interconnection Guidelines wherein exhaustive

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[7] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf 3.1(u) Interconnection Guidelines 2004 (12.11.2007)

[8] http://www.pta.gov.pk/media/PTA-Act-Final-with-2006-amendments.pdf. (31.1.2008)
[9] Ibid.

procedure for entering into the interconnection arrangements, the procedure and the mechanism of dispute resolution etc. are provided in detail. Further Pakistan Telecommunication Authority has also issued Reference Interconnect Offer for the incumbent operator. The issuance of these documents has minimized the chance of exploitation by the incumbent operators qua the new entrants and other operators. As a matter of fact, these documents are keys to the basic concept of competition through interconnection in Pakistan Telecom Market. (A copy of PTCL RIO (Reference Interconnect Offer) is attached as Annexure "A" for ready reference.)

1.1 History of telecommunication

The urge of human beings to communicate at a distance dates back to pre-historic times. Initially the messengers on foot, horse back, camel or boat supplemented by simple sound or visual signals were among the primary means of communication. Rest houses were built in pre-mughal period and those rest houses served as staging posts for the horse riding[10].

The other source of communication was Pigeons which had been used even before the time of Changez Khan for carrying messages but Changez Khan organized a Pigeon relay services across Asia and part of Europe.

Another mode of communication was by lighting of fire on hill tops, thus the release of smoke was an early form of visual signaling.

[10] History of Pakistan Telecommunications by Yusuf Reza, first edition of June 1999 published by Pakistan Telecommunication Authority, Islamabad. (page 15)

At sea the traditional method of communication was to hoist flags at different parts of ships to communicate pre-arranged messages. This later gave rise to flag signaling on sea and land.

Reflections from polished surfaces are regarded as earliest form of telegraphy. The heliostat was a fixed mirror which permitted signaling in different directions[11].

1.1.1 ELECTRIC TELEGRAPH AND TELEPHONE

In 1820, Oersted discovered magnetic properties of electric current. This led to the electromagnetic theory by Amperes and laid the foundation of the Electric Telegraph. In 1832 Samuel Morse invented the Electric Telegraph in America. Simultaneously in the sub-continent Dr. O.Shaughnessy Professor of Chemistry, Medical College Calcutta was continuing his experiments on Electric Telegraph and in 1839 he constructed the first 2 wire, 21 miles of line between Calcutta and Diamond Harbour.

Alexander Graham Bell invented the telephone in 1876 and in two years, telephone became an essential means of communications over land-lines and submarine cables. Towards the end of the 19th century, Macroni had started experiments in practical wireless telegraphy. He succeeded in producing a

[11] From a Presentation of Mr. Aurangzeb Mehmood, Advocate High Court and Visiting Faculty member of International Islamic University (slide No. 13)

transmission upto 12 miles. In 1901 signals were transmitted across Atlantic, thus starting the era of Radio Telecommunications[12].

1.1.2 TELEPHONE EXCHANGE

Telephone exchange equipment made rapid progress since 1901 and magneto exchanges with local battery at subscriber's premises developed into central battery exchanges with operators in both cases connecting subscribers at switches. Then came automatic exchanges with subscribers making connections themselves without the help of an operator by sending pulses from the dials of their instruments. Long distance telephone circuits, however, remained fully or partly manual for a long time, the trunk operator putting through the connection to the distant subscriber through the distant trunk operator or by dialing the distant subscriber himself over the trunk circuit called 'operator dialing'[13].

1.1.3 UNDERGROUND AND UNDER WATER CABLES

Beginning was made by insulating cable wires with cloth saturated with melted pitch and tar. When a large number of underground cables were required for telephone exchange local network, paper insulation for wires was widely used which later on was replaced with Polythene insulation. For further security against water penetration Jelly filled cables were used. Primary cables, i.e., cables from telephone exchange to interconnecting

[12] Ibid (Slides No. 14-16)
[13] Ibid (Slide No. 17)

cabinet have mostly been paper insulated unit twin type or foamed/solid polythene[14].

For secondary network, from cabinet to distribution point polythene insulated unit twin type fully filled cables have been used while for subscriber connection, drop wire has mostly been utilized.

For inter-exchange junctions and trunks, paper core, quad cables kept under air pressure have been found to give good results. For long distance telephone communication, on automatic or semi-automatic basis, a very large number of circuits were required for which coaxial cable was developed which provided a large number of circuits.

Submarine telegraph cables like that linking Karachi with Muscat have been in use for a long time. By 1956, submarine telephone cables also started being used in different parts of the world. One cable linking Europe with the American Continent was the TAT-1 Cable from Canada to U.K. It was a coaxial cable[15].

Another cable called 'CONTAT' was also a trans-Atlantic coaxial cable between UK and Canada brought into service in December 1961. Similarly under-water cables in the Pacific Ocean were laid connecting Canada with Hawaii, Fiji and New Zealand, commissioned in 1962[16].

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[14] Ibid. (Slide No. 18)
[15] Ibid. (Slide No. 20)
[16] Ibid.

1.1.4 RADIO COMMUNICATION

At the beginning of the 20th century, Radio Communications had already started. Signals could now be transmitted without the help of wires. The procedure used in the radio communication was based on the theory that magnetic and electric fields can be propagated without wires to guide them[17].

1.1.5 HF, VHF, UHF AND MICROWVE SYSTEM

For communication with other countries or difficult areas in the same country or as standby emergency circuits, HF wireless systems have been used for a long time. These systems, in spite of high transmitting power and sophisticated receivers, were still subject to facing and atmospheric disturbances and could provide only a small number of channels.

Within the country and with countries connected with land, VHF and UHF frequency bands were used which could give larger number of channels and reasonably good communications[18].

In early 1960 the concept of integrated circuit was introduced. Here, entire circuits would be constructed in a transistor like fabrication. It was thought, and has since been confirmed that the homogeneous (monolithic) nature of the circuit would result in circuit reliability comparable to that of a single

[17] Ibid. (Slide No. 21)

[18] Ibid. (Slide No. 22)

transistor. Further, the small size of the circuits would permit significant sections of an equipment to be placed on plug-in. This is advantageous for maintenance and results in lower cost through batch-processing and elimination of design and fabrication functions previously necessary at the circuit level of construction[19].

1.1.6 DIGITAL SYSTEM

The signal used in the digital system is discontinuous in time and contained to a set of permitted discrete values. Most often, this set of values is restricted to two: one; and; zero; as opposed to an analogue signal for which any value is allowed within certain limits. A typical analogue signal is the signal coming from the microphone of a normal telephone set. This signal is the analogue of the sound pressure formed in the speaker's vocal organs. Digital technology has been used for a long time in the field of telecommunications.

The first known electric telegraph was proposed in the middle of the eighteenth century. Messages sent by telegraph are all digital, coded in different codes e.g. Morse code. Digital signals have also been used in telephony, but only for signaling. A typical example is the sequence of dialing pulses coming from the subscriber set when dialing a number. The new development is the use of digital signals for the transmission of speech in the telephone network. This is a development which started in the

[19] Ibid. (Slides No. 21-22)

beginning of the 1960s with the introduction of pulse code modulation (PCM; transmission system)[20].

1.1.7 OPTICAL FIBRES

Light wave communication systems were in infancy in early 1970s. However, they became a major industry in 1980s. Technological advances took place in fabrication of optical fibers, interconnection devices, cables, sources and detectors. New light wave communication systems using optical fibers have become a very important communication medium. Because of loss and high band-width transmission characteristics, they are ideally suited for carrying voice, data and video signals for high information capacity systems.

Fibers that are used for optical communications are wave guides made of transparent dielectrics whose functions is to guide visible and infra-red light over long distances. An optical fiber consists of an inner cylinder of glass, called the core, surrounded by a cylindrical shell of glass or plastic of lower refractive index called the cladding. The cladding of the fiber is made of high-silica-content glass, multi component glass or plastic[21].

1.1.8 SATELLITE COMMUNICATION SYSTEMS

Experiments on satellite communication started in 1960 when National Aeronautical and Space Administration (NASA) launched a balloon satellite

[20] Ibid. (Slide No. 23)

[21] Ibid. (Slide No. 27).

Echo 1 about 30 m in diameter and in an orbit of 1600 km altitude. This was the first experiment on the so called passive relaying. The American Telegraph and Telephone Company, Bell Telephone Laboratory launched the Telstra 1 Satellite in 1962. NASA was launched; Relay-1; satellite in the same year. These satellites had the disadvantage of short communication period due to being low altitude satellites. However, with the launching of Syncom 2, a geo-stationery satellite by NASA in 1963, realization of global satellite communication was enhanced. In 1965 semi-experimental and semi-commercial geo-stationery satellite; Early Bird; was launched by the Interim Communication Satellite Consortium later renamed INTELSAT (International Telecommunication Satellite).

Satellite Communication System has advanced in a big way since their beginning in 1970s. Intelsat has launched many more satellites and affected improvements to cope traffic requirements[22].

1.1.9 MOBILE CELLULAR SYSTEMS

Mobile Radio Telecommunication Systems started being used from 1980 but the first generation mobile cellular systems may be taken to have started in a big way from 1985, using frequencies of 450 or 900 MHz. These systems used analogue modulation and were specified separately a dedicated systems for paging, cordless phone, mobile terrestrial and mobile satellite communication.

[22] Ibid. (Slides No. 28-30)

In early 1990s, second generation mobile systems started being used at regional level e.g. Global System of Mobile Communication (GSM) in Europe, Australia, India and Gulf States. The maximum cell radius was normally 35 km but it could be doubled for less populated areas. The frequency bands initially used were 935-960 MHz and 890 to 915 MHz. The 1980s also saw the introduction of the first and second generation digital geo-stationery orbit mobile satellite systems, for example, the Inmarsat voice, date and facsimile services[23].

1.2 History of Telecommunication in Pakistan

Pakistan came into being at midnight on 14th August 1947, and with that started the mammoth task of creating from scratch the whole machinery of Central Government. Setting up of the central government and tackling the other problems such as refugees etc., there was needed a good and efficient telecommunication service. Apart from the paucity of telecommunication services, the supporting organizations which provide facilities for keeping the services going like Store Depots, Repair Shops, Training centers etc were also non existent in both wings of Pakistan[24]

The period of 1947 to 1962 was of great importance for Telecommunications in Pakistan as during this period, a sound foundation was laid by creating the supporting organizations of stores and workshops.

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[23] Ibid. (Slide No. 32)

[24] History of Pakistan Telecommunications by Yusuf Reza, first edition of June 1999 published by Pakistan Telecommunication Authority, Islamabad, (Part-V-page 137)

The combine set up of Posts and Telegraph Department which was inherited from India continued even after partition as an attached department of Ministry of Communications, Central Govt. of Pakistan[25].

1.2.1 The Telegraph Act, 1885

In the Indian Sub-Continent, the first legislation after the invention of telegraph is Telegraph Act, 1885[26] and interestingly that Act. is still in force. Part I of the Act gives definition of; telegraph; Telegraph Officer: message, telegraph line, post, telegraph authority and local authority. Part II lays down the privileges and powers of the Government in respect of telegraphs and power to grant licenses and take possession of licensed telegraphs and to order interception of messages. Part III deals with powers for telegraph authority to place and maintain telegraph line under, over, along or across, and posts in or upon any immovable property. Part IV deals with penalties for establishing, maintaining or working unauthorized telegraph. Part V empowers provincial Government to employ additional police force in places where mischief to telegraph is repeatedly committed. Under the Act, a Telegraph Authority was though established but the powers to establish telegraph and interception remained with the Government. There is also a provision regarding Licensing[27]

1.2.2 The Wireless Telegraphy Act, 1933

[25] Ibid.
[26] Telegraph Act, 1885 (Act XIII of 1885).
[27] Ibid.

With the developments in the wireless telegraphy a need was felt to address the same in the Wireless Telegraphy Act of 1933 (Act No. VII of 1933)[28]. Said Act contains the provisions as to wireless communication, wireless telegraphy apparatus and its license. In the statement for objects and reasons for the Wireless Telegraphy Act, 1933 (VII of 1933) it is mentioned as under:-

> "An important source of revenue to the Indian State Broadcasting Service is the fees on licenses for wireless apparatus. These licenses are issued under the Telegraphy Act which, however, only gives power to control establishment, maintenance and working of such apparatus in British- India. The detection of unlicensed apparatus and the successful prosecution of offenders are therefore difficult in practice as it is first necessity to locate unlicensed apparatus and then to prove that it has actually been established, maintained and worked. It is believed that the revenue lost at present owing to the use of unlicensed wireless apparatus is considerable, thus adversely affecting the financial position of the Indian State Broadcasting Service. It is now proposed to remedy this state of affairs by legislation to prohibit the possession without license of wireless apparatus as distinct from the establishment, maintenance and working of such apparatus and the present Bill has been drafted with this object[29]."

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[28] Wireless Telegraphy Act of 1933 (Act No. VII of 1933).

[29] Wireless Telegraphy Act, 1933 (VII of 1933) compiled by Muhammad Ashfaq Butt Advocate in the Manual of Telecommunication Laws pulished in 2001 by Kausar Brothers, Lahore.(From Notes of Section 1).

Section 5 deals with licenses and offences and penalties are provided in section 6. As per section 7 power of search are provided to a Magistrate of Ist Class[30].

1.2.3 T&T DEPARTMENT

In the year 1962, it was felt that in the changed circumstances, when the importance of combined offices had gone considerably down and large scale expansion of both Postal services and the Telecommunications Services was necessary, a split must take place. Only then the both services could be expected to meet the public demand of additional and better facilities unhindered by the un-intentional hurdles created by the personnel of the other service. This realization had been growing for the last many years, In September, 1959, on the directive of the then Communication Minister, a detailed examination of the Department's working was made and it was found that with the extensive expansion of the postal and telecommunication service which had already taken place and that expected in future, it was no longer possible to run the services and the administrations efficiently as a combined department. The Government therefore, decided to bifurcate the department of Posts AND Telegraphs into two separate and independent departments namely Pakistan Telegraph and Telephone Department and Pakistan Post Office Department. After the separation of East Pakistan in December, 1971, the jurisdiction of the Pakistan T&T Department was

[30] Wireless Telegraphy Act, 1933 (Act VII of 1933).

opened to the four provinces of Punjab, Sind, NWFP and Baluchistan, AJK, Northern Areas, FATA and Islamabad capital territory[31].

1.2.4 Pakistan Telecommunication Corporation Act, 1991

Government of Pakistan promulgated an ordinance No. XVI on 15.12.90 to establish the Pakistan Telecommunication Corporation (PTC). Later the Parliament passed the PTC Act of 1991 (XVIII of 1991)[32] and created a state owned Corporation out of the Pakistan Telegraph and Telephone Department. In other words, the Pakistan Telegraph and Telephone Department of the Government was converted into a corporation. The purposes and functions of the Corporation were to establish, maintain and work telecommunications, to provide telecommunication services in all parts of Pakistan, to promote manufacture of telecommunication plant and equipment and transfer of technology, to arrange training of its employees and within reasonable limits to promote their welfare, to conduct and assist research and to advise Government on matters relating to telecommunications. The Act provides protection to the terms and conditions of service of the department's employees and contains the provisions regarding transfer of assets and liabilities of the Telegraph and Telephone Department.

Administration of the Corporation was vested in a Board consisting of a Chairman who was also the Chief Executive and not more than 11 other

[31] History of Pakistan Telecommunications by Yusuf Reza, first edition of June 1999 published by Pakistan Telecommunication Authority, Islamabad. (Ch.XIII-page 239)
[32] Pakistan Telecommunication Corporation Act of 1991 (XVIII of 1991).

Directors of whom not less than two were to be professional telecommunication engineers[33].

1.2.5 Pakistan Telecommunication (Re-Organization) Act, 1996

The Pakistan Telecommunication (Re-Organization) Act was issued in 1996 and became effective from 13.10.1996. A Board comprising 7 Directors to manage the affairs of PTCL was formed. PTCL was granted license for the provision of basic telephone service for a period of 25 years with exclusive right for seven years. The Company was not liable to pay income tax for three years. All certain assets and specifically enumerated liabilities of PTC were transferred to the Company. All employees of PTC were transferred to the new company and ceased to be employees of Corporation[34].

At present, the existing legal regime regarding telecommunication is governed by Pakistan Telecommunication (Re-Organization) Act, 1996 as amended in March, 2006. Through that Act, Pakistan Telecommunication Corporation was dissolved and bifurcated into five new legal entities[35] namely:-

i) Pakistan Telecommunication Company
ii) National Telecommunication Corporation
iii) Pakistan Telecommunication Authority
iv) Pakistan Telecommunication Employees Trust
v) Frequency Allocation Boar

[33] Ibid.
[34] Pakistan Telecommunication (Re-Organization) Act, 1996 (Act XVII of 1996).
[35] Section 35 of the Ibid Act.

Vide section 3 of the Pakistan Telecommunication (Re-Organization) Act; Pakistan Telecommunication Authority was created with the functions inter-alia to regulate the establishment, operation and maintenance of telecommunication systems and the provision of telecommunication service in Pakistan. Section 5(2)(h) empowered the Authority to provide guidelines for, and determine, the terms of interconnection arrangements between licensees where the parties to those arrangements are unable to agree upon such terms[36].The Authority was also given exclusive powers to grant licenses for telecommunication service.

Pakistan Telecommunication Company Limited was also established with reference to section 34 of the Act. The Principal object of establishing the Company was the provision of domestic and international telecommunication and related services consistent with the provisions of the Act[37].

National Telecommunication Corporation was also established with reference to section 41 of the Act for provision of telecommunication Services within Pakistan on a non-exclusive basis only to the armed forces, defence projects, Federal Government, Provincial Governments or such other Governmental agencies or Governmental institution as determined by the Federal Government[38].

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[36] Ibid. Pakistan Telecommunication (Re-Organization) Act, 1996 (Act XVII of 1996)

[37] Ibid.

[38] Ibid.

Frequency Allocation Board was established with exclusive authority to allocate and assign portions of the radio frequency spectrum to the Government, providers of telecommunication services and telecommunication system, radio and television broadcasting operations, public and private operators and others[39].

Pakistan Telecommunication Employees Trust was also established vide section 44 of the Act for making provision for the payment of pensions to the telecommunication employees.

The Act was amended in the year 2006 and the provisions of Universal Service Fund and Research and Development Fund ,inter-alia, were inserted and there provided the creation of Funds, management and control, sources of income and utilization of the Funds.

1.3 Need of interconnection in Telecommunication

As explained earlier, Interconnection may be defined as the physical and logical linking of public electronic communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with the users of the same or another undertaking, or to access services provided by another undertaking. Services may be provided by the parties involved or other parties who have access to the network[40].

[39] Sections 42-43 of the Ibid Act.
[40] Introduction to Interconnection and Access by Dr. Zouakia Rochdi. (Ch. A1. page 4)

In the 1990s, there took place significant changes in telecommunications sector of the developing countries because a number of state-owned companies began to be privatized and the concept of monopoly was progressively phased out in favour of deregulation and competition. This came about as developing countries realized that there was a need to liberalize telecommunication markets in order to make it possible for networks to be improved, rapidly to deliver quality services to the customers, and, naturally, to attract private capital. Nonetheless, in most of those countries the tele-density rate remains relatively low, in particular for fixed telephony. Some of those developing countries were also lacking technically advanced networks capable of providing a quality of service in accordance with international standards[41].There was also a lack of the resources necessary to properly manage the opening of the telecommunication markets to competition. Thus there was a need of a suitable legal framework, appropriate for the needs of liberalization and regulation; a well-defined calendar and clear strategy for opening the telecommunication market[42].

That said, most developing countries have already opened the mobile segment of the market to competition, with plans for the fixed part of the market to be opened. This liberalization should give private citizens and businesses in those countries access to a better quality of telecommunication service at an affordable price, for basic services and of course the advanced services (Internet, broadband) alike[43]

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[41] Ibid.
[42] Ibid.
[43] Ibid.

In a partially liberalized environment, the most sensitive issues by far are those that touch on network interconnection, particularly when it is planned to open the market to competition still further. New entrants require a degree of reassurance, in the form of an appropriate regulatory framework for interconnection, to justify the heavy capital expenditure required and the new entrants typically rely heavily on the incumbent's network to help them provide services, in the form of leased lines or infrastructure sharing. It is therefore a prime regulatory imperative that the interconnection regime between competitors be a healthy, transparent and fair one, if it is desired to attract capital and foster investor confidence[44].

According to ITU surveys interconnection-related issues are ranked by many countries as single most important problem in development of competition[45].

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[44] *Ibid.*

[45] Module 3 (Interconnection)- Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Ch.3.1.3)

Chapter No.2-- Competition

2.1 Basic concepts of competition

2.1.1 Market definition:

The definition of a market is a key issue in competition policy and analysis. It is necessary to define a; relevant market; in order to establish whether a firm has a dominant position in that market. Similarly, in analyzing whether a restrictive agreement among firms has an appreciable effect on reducing competition in a market, it is necessary to define the relevant market and then to evaluate the impact of the agreement in that market. Market definition is an initial step in competition analysis. It provides the context in which to evaluate the level of competition and the impact of anti competitive conduct[46].

There are two aspects to the definition of a market- the product, including a service, and the geographic area in which the product is sold. In defining the product, close substitutes are normally included. The analysis of substitutability is generally conducted from the demand side that is from the perspective of buyers of the product.

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[46] Module 5-Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (page 18)

For example, the definition of the market for international telephone service in a country could include IP Telephony services that are available through the PSTN, by dialing a specific access number or code. However, the definition would generally exclude; computer-to-computer; IP. Telephony services require special software, computers at both ends of a call, and pre-arranged calling times etc., to the average buyer of international telephone services, such computer to computer services would not be a close substitute for international telephone service[47].

As per Competition Ordinance, 2007, "relevant market" means the market which shall be determined by the Commission with reference to a product market and a geographic market and a product market comprises all those products or services which are regarded as interchangeable or substitutable by the consumer' by reason of the 'products' characteristics, prices and intended uses. A geographic market comprises the area in which the undertakings concerned are involved in the supply of products or services and in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighboring geographic areas because, in particular, the conditions of competition are appreciably different in those' areas[48].

2.1.2 The Product Market

A widely accepted approach to market definition begins with the assumption that there is a monopolist in the relevant product market. The question is

[47] Ibid.
[48] Section 2(1)(k) of the Competition Ordinance 2007, (Ordinance LII of 2007).

then asked; could the hypothetical monopolist raise the price of the product by a small but significant amount and for a non-transitory period? If a sufficient number of buyers would switch to other products so as to make the price increase unprofitable for the monopolist, those substitutes would be included in a new definition of the market. This analysis will be repeated until the boundaries are set so that substitution does not make the price increase an unprofitable strategy[49].

2.1.3 The Geographic Market

The second dimension is the definition of the geographic scope of the market. In defining the geographic boundaries of a product market, the aim is to identify the extent to which the proximity of rival suppliers can impose competitive constraints on the hypothetical monopolist or actual market participant. Again, the definition of the geographic scope of the market is based on an assessment of substitutability in response to product price changes[50].

Geographic areas are more important in defining some telecommunications markets than others. For example, the market for local access in place A is not affected by the decree of competition in the place B local access market. These are clearly separate markets. However, geography is increasingly less important in defining the level of competition in markets for Internet Service Providers, E-mail providers or even international long distance services. The

[49] Module 5-Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Page-18)

[50] Ibid. (Chapter 5.2-page 18)

markets for these products are rapidly becoming global markets. It would be difficult, if not impossible, for an e-mail service provider in place A to raise the price of its e-mail service if customers in place A have local access to substitute e-mail service providers at B that are based in other geographic area[51].

Having said that, the definition of product and geographic markets remains very relevant for the services that remain most subject to market dominance, particularly local and national long-distance services[52].

The concept of "geographic market" is also addressed in the definition provided for "relevant market" in section 2(1)(k) of the Competition Ordinance, 2007 wherein it is provided that a geographic market comprises the area in which the undertakings concerned are involved in the supply of products or services and in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighboring geographic areas because, in particular, the conditions of competition are appreciably different in those areas[53].

2.1.4 Barriers to Entry

The evaluation of competitive markets and market behavior often focuses on the extent to which one or more firms can introduce and sustain price increases. If it is easy for a new supplier to enter a market and provide a substitute product, then established suppliers will be reluctant to implement

[51] Ibid.
[52] Ibid.
[53] Competition Ordinance, 2007.

significant long term price increases. Such price increases would invite market entry, which will increase competition[54].

The existence of barriers to market entry will limit this competitive response. There are many types of barriers to entry in different markets. Among the most commonly recognized are:-

- government restrictions such as monopoly franchises or restrictive licensing practices
- economies of scale (i.e., where per unit production costs fall as output increases, a large established supplier can produce at a lower per unit cost than new entrants.
- High fixed/capital costs; and
- Intellectual property rights such as copyright and patent protection (which may affect the availability to a competing supplier of key inputs or outputs[55].

Multiple barriers to entry may exist in a single telecommunications market. For example local networks are typically regarded as being characterized by economies of scale. The establishment of a local facilities-based network also requires a large investment in fixed costs. Local telecommunications operators often require government licenses, which may be granted on an exclusive or otherwise restrictive basis. Entry into wireless local networks is also restricted by spectrum scarcity. Certain local telecommunications

[54] Module 5-Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Chapter 5.2.2-page 19)

[55] Ibid. (Chapter 5.2.2-page 19)

services may operate on network platforms which have patent or copyright protection (complicating or preventing the launch of a competing service)[56].

In addition to these barriers to entry, it is also possible for a dominant firm to engage in conduct that establishes additional barriers to entry. Refusal to supply essential facilities and refusal to interconnect networks are two classic examples of anti-competitive conduct that an incumbent operator may engage in to discourage or prevent new entry[57].

2.1.5 Market Power and dominance

As a practical matter, most of the concern of competition authorities and telecommunications regulators promoting competitive markets is focused on established telecommunications operators that have market power. Firms without market power are simply not able to cause serious problems in the economy or in the sector. If they raise their prices above market levels, for example they will simple lose customers and profits[58].

In general market power is defined as the ability of a firm to independently raise prices above market levels for a non-transitory period without losing sales to such a degree as to make this behavior unprofitable. Factors frequently considered in determining whether a firm has market power include barriers to market entry; pricing behavior; profitability and vertical integration[59].

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[56] Ibid.
[57] Ibid. (Ch. 5.2.3)
[58] Ibid.
[59] Ibid.

Market share can be measured in several ways, including monetary value, units of sales, units of production and production capacity. Market share alone can be an inaccurate measure of market power. However, it is unlikely that a firm without significant market share will have sufficient market power to behave anti-competitively on its own. Therefore, market share is usually a starting point in determining market power.

Pricing and profitability are other factors relevant to a determination of market power. The existence of true price rivalry is inconsistent with a finding of market power. Price competition, which consists of 'follow the leader; behaviour is consistent with the exercise of market power by the price leader[60].

The profitability of existing suppliers in a market can also be indicative of the extent of true price competition. Excessive profitability typically indicates insufficient price competition and the exercise of market power in setting prices[61]

Finally, vertical integration is relevant to an assessment of whether a firm which enjoys market power in one market is able to extend its power into upstream or downstream markets. In telecommunications, incumbent operators that are vertically integrated (e.g. that provide local access as well as long distance or international services) can often use their market power in the local access market to competitive advantage in the long distance and

[60] Ibid.
[61] Ibid.

international markets. They may abuse their market power, for example, by inflating local access prices including interconnection prices and using the surplus revenues to subsidize rate cuts to their competitive long distance or international services.

2.2 Concept of competition in Pakistan

2.2.1. History of Competition Laws in Pakistan

As per history of Competition Laws in Pakistan, government had set up anti-cartel laws study group in the year 1963 and consequently Monopolies and Restrictive Trade Practices Ordinance 1970 (MRTPO 70) was promulgated through which Monopoly Control Authority was established. The objectives of the MRTPO were to provide measures to contain: (1) undue concentration of economic power; (2) monopoly power; and (3) restrictive trade practices[62].

In MRTPO, the activities and behaviours which constitute undue concentration of economic power, unreasonable monopoly power or unreasonably restrictive trade practices were explained and the Ordinance prohibited these activities and behaviours as clearly defined in the law, and empowered the MCA to collect information relevant to these situations through the process of registration[63].

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[62] Monopolies and Restrictive Trade Practices (Control and Prevention) Ordinance, 1970 (V of 1970), stood repealed by Competition Ordinance, 2007.

[63] Ibid. and from an Article "Competition in Pakistan; by Khalid A Mirza and Faisal K Daudpota available at http://www.mca.gov.pk/Downloads/Competition%20Pakistan.pdf. (visited on 12.12.2007).

In can be construed that the main functions of Monopoly Control Authority were limited to register undertakings, individuals and agreements; to conduct inquiries into the general economic conditions of the country, with particular reference to the concentration of economic power and the existence of (or increase in) monopoly power and restrictive trade practices; to conduct inquiries in specific cases; and to give advice to individuals or undertakings on whether or not a certain course of action was consistent with the provisions of the law[64].

The performance of the Monopoly Control Authority was never upto the mark for certain reasons such as the nationalization process, which started in 1972. Even otherwise, the MCA's emphasis was on the diversification of the capital resources of undertakings. To this end, a few private companies, with a total value of assets that was not less than the prescribed limit under the law, were converted into public limited companies. The agency only started asserting itself in the mid 1990s, but had to face a lot of interference in carrying out its functions. The MCA also suffered from a chronic shortfall in funding – its requirements being met through allocations out of the federal budget. Further MCA had lacked the necessary background and training to tackle the complex issues of assessing market power. Although the MCA acted in the public interest on some occasions, it was unable to communicate its achievements to the general public. It did not have any material to educate the general public on whose behalf it acted. Further, the MCA had very limited penal powers – it could fine a maximum of only 100,000rupees (US$1,660) for not carrying out its orders, or, in the event of a continuing

[64] Ibid.

infraction, not more than 10,000 rupees (US$ 160) per day. Apart from these pathetic penalties, MCA had no power to grant leniency or a reprieve, which is an important tool used by competition agencies in other countries to adduce evidence. It also could not conduct dawn raids to gather evidence[65].

2.2.2 Existing Laws in Pakistan

In order to provide for free competition in all spheres of commercial and economic activity to enhance economic efficiency and to protect consumers from anti competitive behaviour, an Ordinance No. LII of 2007 was promulgated in Pakistan in October, 2007[66].

Some important definitions provided in the Ordinance are given as under:-

Dominant Position: Dominant position of one undertaking or several undertakings in a relevant market shall be deemed to exist if such undertaking or undertakings have the ability to behave to an appreciable extent independently of competitors, customers, consumers and suppliers and the position of an undertaking shall be presumed to be dominant if its share of the relevant market exceeds forty percent[67].

"**Relevant Market**: means the market which shall be determined by the Commission with reference to a product market and a geographic market and a product market comprises all those products or services which are regarded as interchangeable or substitutable by the consumer' by reason of

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[65] *Ibid.*
[66] Competition Ordinance 2007 (Ordinance No. LII of 2007).
67 Ibid.

the 'products' characteristics, prices' and intended uses. A geographic market comprises the area in which the undertakings concerned may be involved in the supply of products or services and in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighboring geographic areas because, in particular ,the conditions of competition are appreciably 'different in those' areas[68].

Undertaking, means any natural or legal person, governmental body including a regulatory authority, body corporate, partnership, association; trust or other entity in any way engaged, directly or indirectly, in the production, supply, distribution of goods or provision or control of services and shall include an association of undertakings[69].

2.2.3 Prohibition of abuse of dominant position

An abuse of dominant position shall be deemed to have been brought about, maintained or continued if it consists of practices which prevent restrict, reduce or distort competition in the relevant market[70].

The expression "practices" referred above shall include inter-alia:

(a) Limiting production, sales and unreasonable increases in price or other unfair trading conditions;

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[68] Ibid.
[69] Ibid.
[70] Ibid.

(b) Price discrimination by charging different prices for the same goods or services from different customers in the absence of objective justifications that may justify different prices;

(c) Tie-ins, where the sale of goods or service is made conditional on the purchase of other goods or services;

(d) Making the conclusion of contracts subject to acceptance by the other parties supplementary obligations which by their nature or according to commercial usage, have no connection with the subject of the contracts;

(e) Applying dissimilar conditions to equivalent transactions on other parties, placing them at a competitive disadvantage.

(f) Predatory pricing driving competitors out of a market; prevent new entry, and monopolize the market;

(g) Boycotting or excluding any other undertaking from the production, distribution or sale of any goods or the provision of any service; or

(h) Refusing to deal[71].

With reference to section 4 of the Competition Ordinance, 2007, it is provided that no undertaking or association of undertakings shall enter into any agreement or, 'in the case of an association of undertakings, shall make a decision in respect of the production, supply, distribution, acquisition or control of good or the provision of services which have the object or effect

[71] Ibid.

of preventing, restricting or reducing competition within the relevant market[72].

In short, the characteristics of the fresh legislation and the new competition policy framework include the following:

- Non-discrimination: The law's non-discriminatory approach implies predictability in interpretation and is supportive of transparency, accountability and confidence in its application.
- Protection of competition and not the competitors: The assessment of competition will be tolerant of single firm growth on the basis that competition law should not punish those who have gained dominance through efficient use of resources and innovation without resorting to exclusionary and anticompetitive tactics.
- Facilitating business: Competition law needs to be viewed as supportive to private business, not an additional hindrance. It will promote consumer welfare without hampering the everyday activities of business undertakings.
- Co-ordinated approach: The responsibility for implementing the new law depends on ordinary citizens as well as business entities bringing forward complaints. Coordination will also be required with other public agencies charged with implementing government policies, as well as with the relevant ministries analysing and

[72] Ibid.

making public policy which impacts on the competitive landscape; and

- Pursuing integrity in the application of the law: This includes (1) a collegiate body of commissioners possessing integrity, stature, ability, substantial experience and (collectively) a range of relevant expertise; (2) transparency and speed in the investigation of serious infractions without undue burdens on individuals and businesses; (3) public proceedings with safeguards for proprietary information; (4) published decisions subject to review on appeal; and (5) annual reporting based on third party audits[73]

2.3 Competition and Interconnection

Interconnection plays a crucial role in the creation of a competitive telecommunication services market.

Interconnection is the component that will allow new entrants to provide telecommunication services using the incumbent operator's network and infrastructure, while avoiding the need for massive capital investment. It creates incentives for the incumbent to become more competitive by providing a broader range of services (leased lines, wholesale, etc.).

Interconnection contributes to meeting the objectives of universal service by making basic telecommunication services accessible to a larger number of

[73] Article of Mr. Khalid A Mirza and Faisal K Daudpota on the subject: Competition in Pakistan available at http://www.mca.gov.pk/Downloads/Competition%20Pakistan.pdf. (visited on 12.12.2007).

users. It also leads to a range of new innovative communication services being introduced and made available.

Interconnection and competition are thus closely linked, as the one presupposes the other. The role of interconnection is to stimulate and facilitate competition between telecommunication networks while ensuring their universality.

2.4 Significance of interconnection

When there is more than one operator in a market, interconnection between operators is essential for subscribers of one network to communicate with subscribers of another network. In an environment where one operator is significantly larger than the others and possesses individual market power, however, it may have little or no incentive to negotiate reasonable terms of interconnection with other carriers. Under such circumstances, therefore, it is necessary for the regulator to have a role in the interconnection regime.

2.5 The transition from monopoly to competition

Monopoly is something which could be a result of market failure. A monopolistic market is often associated with excessively high product prices, reduced supply levels or other behavior that reduces consumer welfare. Collusive agreements among suppliers are another example of market failure. Supplier collusion can be directed to increasing prices or restricting output, behavior that is similar to the exercise of monopoly power.

Telecommunication has, in most jurisdictions, developed in a monopoly environment. As competition is introduced into telecommunications markets, there are typically concerns about the continuing exercise of market power by the incumbent operator. This exercise of market power constitutes a special form of market failure that must be addressed by regulators and competition authorities in many countries.

An effective competition policy must take into account the specific characteristic of the market to which it is applied. Telecommunications network service markets raise unique challenges for the application of competition policy. These challenges arise from the specific manner in which some incumbent network operators are able to continue to dominate their markets after the introduction of competition.

It is generally desirable to minimize government intervention in competitive markets. However, there is a general consensus that regulatory intervention is required to implement a successful transition from monopoly to competitive telecommunications markets. The introduction of effective competition into telecommunications markets around the world has generally been more difficult and intrusive than in the case of most other markets.[74]

2.6 Rational

When competition exists in market based economies, two or more different suppliers contend with each other to sell their goods or services to

[74] Ibid.

customers. Competitive suppliers may offer lower prices, more or better quantitative, and packages or qualities of services to attract customers. Competition serves the public interest by inducing suppliers to become more efficient and to offer a greater choice of products and services at lower prices.

In a competitive market, individual suppliers lack; market power. They cannot dictate market terms, but must respond to the rivalry of their competitors in order to stay in business. Market power is generally defined as the power to unilaterally set and maintain prices or other key terms and conditions of sales; that is without reference to the market or to the sections of competitors[75].

2.7 Interconnection from the perspective of operators and consumers

Interconnection plays an important role for operators and consumers. For operators, it is crucial for capturing market share. For incumbents, faced with new competition after many years of monopoly, the temptation to restrict access to their network and protect the monopoly status quo is very strong[76].

This can take the form of certain anti-competitive practices affecting interconnection, practices that are intended to inhibit or delay the entry of new operators on the market.

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[75] Module 5-McCarthy Tertault. (Chapter 5.2.3-page 19)
[76] Introduction to Interconnection and Access by Dr. Zouakia Rochdi. (Chapter A.3-page-5)

Examples of such practices include: – prohibitive interconnection charges; – refusal to grant access to some parts of the network; – refusal to unbundle the network elements needed for effective interconnection, etc.

From the viewpoint of a new operator, the conditions of market entry are largely determined by the interconnection policy on the market in question, in particular the level of interconnection charges.

Interconnection is thus important for new entrants because it can allow them to offer their services on the market without the need for heavy capital expenditure.

From the viewpoint of the consumers, interconnection is indispensable for users in one network to be able to communicate with other users and make use of the full range of services, independently of their network of origin. It is thanks to interconnection between the many different kinds of network that residential and business users around the world have reaped numerous benefits in recent years.

Interconnection has made telephone access possible for anyone having a telephone or access to a public payphone anywhere in the world, in addition to access to the Internet and the services provided there (e-commerce, automatic banking and so on)[77].

2.8 Interconnection and regulatory policy

[77] Ibid. (Chapter A.3-page 5)

Interconnection allows countries to reach certain objectives, in that it makes it possible to:– meet consumer needs, particularly in terms of the provision of a wide range of high-quality services; promote infrastructure development and innovation; contribute to the economic and financial development of the country by increasing the level of international investments; ensure network connectivity, and thereby service interoperability[78].

However, the effectiveness of interconnection depends on the regulatory framework and how it is applied. While interconnection and liberalization are closely linked, and liberalization in principle requires less regulator intervention, the fact remains that the regulation of interconnection is essential. For example, it is impossible to imagine a successful transition from a monopoly telecommunication services market to a competitive one without regulatory intervention; anything else would result in cut-throat competition and the abuse of dominant market position, in a situation of non-viable competition.

However, interconnection is anything but a straightforward exercise; it calls for a high degree of cooperation between competing companies. In general there is an imbalance in negotiating positions that favours the incumbents over the new entrants. As already indicated, the former may delay or impede the entry of competitors on the marketplace by leveling high charges for interconnection, or by refusing to construct adequate interconnection capacity or to make it available. Competitive market functioning therefore generally requires the intervention of a regulator, whether it is to define the

[78] Ibid. (Capter A.4-page 6)

rules or to monitor that they are effectively being applied[79]. In implementing interconnection, operators and regulators are confronted with a number of problems; these challenges are not only commercial in nature, but also procedural and technical. They include the following[80]:-

- Technical availability of interconnection with incumbent operators for different types of service (compatibility of services and networks);
- Publication of a reference interconnection offer (RIO);
- Existence of guidelines for negotiating interconnection contracts;
- Contract transparency;
- Absence of discrimination between operators in granting access to interconnection services;
- The level, structure and basis for calculation of interconnection charges;
- Equal access for clients of competitor networks;
- Quality of interconnection;
- handling the costs of universal service;
- Unbundling of network elements;
- Existence of rapid, independent procedures for resolving disputes, and the means for enforcing the rules.

2.9 Regulatory tools

This section deals with the regulatory tools that can be used to make interconnection work for all of the players. These tools are thus of great

[79] Ibid. Chapter A.4 page 6)
[80] Ibid.Chapter A.4 page 6)

importance for the opening of the market to competition. They concern: – aspects relating to infrastructure access (access to the point of interconnection (POI), local loop unbundling, co-location and passive infrastructure sharing); – aspects relating to competition (carrier selection, number portability, national and international roaming); – aspects that are specific to dominant operators (concept of relevant market and significant market power in a defined relevant market (inspired in large part by concepts developed by the European Commission), obligations applicable to dominant operators, expansion of the interconnection catalogue to foster Internet development, and dealing with the specific problems of fixed-to-mobile calling); -Aspects those are specific to dispute resolution[81].

2.10 Access to the point of interconnection

The reference document of the General Agreement on Trade in Services makes the following stipulations regarding the interconnection to be provided:

"Within the limits of permitted market access, interconnection with a major supplier will be ensured at any technically feasible point in the network. Such interconnection is provided[82]:

a) Under non-discriminatory terms, conditions (including technical standards and specifications) And rates and of a quality no less favourable

[81] Ibid.Chapter B. pages 6-7)
[82] Ibid. (chapter B.1-page 7)

than that provided for its own like services or for Like services of non-affiliated service suppliers or for its subsidiaries or other affiliates;
b) In a timely fashion, on terms, conditions (including technical standards and specifications) And cost-oriented rates that are transparent, reasonable, having regard to economic feasibility, And sufficiently unbundled so that the supplier need not pay for network components or facilities That it does not require for the service to be provided; and

c) Upon request, at points in addition to the network termination points offered to the majority of Users, subject to charges that reflect the cost construction of necessary additional facilities. It is clear from the above-cited reference document from the General Agreement on Trade in Services and from international best practices that the opening of all interconnection points for Access by competitors is essential[83]

To this end, operators must make proposals in their Reference interconnection offer (RIO) for Direct or indirect access:– To their subscriber-serving exchanges; and – To their higher-hierarchy exchanges or an equivalent technical solution.

The timeline for opening automatic exchanges that were closed to interconnection' must be announced in advance. This information is necessary for proper planning of the physical Interconnection and hence for the proper financial management of the competitor. This is of the Utmost

[83] WTO Reference Paper at http://www.wto.org.

importance for the competitors' business plans, particularly as concerns future capital Expenditure and service offers[84]

[84] Ibid.

Chapter No. 3

Interconnection in general

3.1 The definition and scope of interconnection

The complexity of interconnection has given rise to a variety of definitions, and demands a significant regulation effort in the form of a telecommunication law. As a starting point, interconnection may be said to be the sum of all the commercial and technical arrangements which operators and service providers use to connect their equipment, networks and services so as to provide their customers with access to the customers, services and networks of other service providers[85].

As per Interconnection Guidelines issued by Pakistan Telecommunication Authority, interconnection means the physical and logical linking of telecommunications networks used by the same or a different operator in order to allow the users of one telecommunications network to communicate with the users of the same or another telecommunications network or to access services provided by a telecommunications network and the services may be provided by the parties involved or other parties who have access to the network[86].

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[85] Introduction to Interconnection and Access by Dr. Zouakia Rochdi. (Ch. A1.page4)
[86] http://www.pta.gov.pk/media/Interconnection Guidelines 2004.pdf (18.1.2008)

These different definitions make it clear that successful interconnection must guarantee the interoperability of telecommunication networks and services.

Wasteful and uneconomic duplication of network facilities should be minimized.

Conditions for fair competition between the incumbent operator and new entrants should exist.

The users of one network can communicate with the users of other network[87].

3.2 Various legal documents regarding interconnections in Pakistan

3.2.1 De-regulation Policy, 2003

Government of Pakistan had issued a De-Regulation Policy for the Telecommunication Sector in July 2003. As per said policy, it was made obligatory for LDI licensees to start roll-out b building at least one Point of Interconnect in five of PTCL Regions within one year of award of license and in all thirteen regions within 3 years and to provide incoming and outgoing interconnection services, both for voice and data tariff, to all who may request it[88].

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[87] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault- Ist Printing 2000.(Ch. 3.1.1)

[88] De-Regulation Policy for the Telecommunication Sector issued by Govt. of Pakistan in July 2003: http://www.pta.gov/media/telecom25092003.pdf (19.12.2008).

The obligations for LL licensees were to start operations with building and operating one Point of interconnect within the prescribed period and in each licensed PTCL Region where they operate at acceptable technical and quality standards.

Both types of licensees will have the right to interconnection, leased lines and co-location facilities from incumbents. Pricing of incumbent services will be determined in accordance with the notified Rules and monitoring by PTA and pending the development by PTCL of unbundled cost accounts of services that are approved by PTA, incumbents interconnection prices shall be based on international benchmarks. Lead times for provision of interconnect facilities to new-entrants by PTACL shall be set out in a 'Reference Interconnect Offer' to be made available by PTA and will be in accordance with international benchmarks[89].

Apart from the licensees, there were also obligations for PTCL inter-alia to prepare all transit and tandem switches for interconnection and prepare 50% of local main switching units for interconnection which one year[90].

PTA to issue a 'Reference Interconnect Offer' to be used as the default interconnection offer for interconnection with PTCL pending determination of LRIC based pricing and PTA to continue to regulate PTCL's rates and services in the public interest, as per the notified Rules. As the market for particular services become effectively competitive, PTA to reduce the

[89] Ibid.
[90] Ibid.

regulatory burden on PTCL in respect of such services, while maintaining appropriate anti-competitive safeguards[91].

3.2.2. Mobile Cellular Policy, 2004

Mobile Cellular Policy was issued by Government of Pakistan in January 2004. One of the objectives of said policy was 'fair competition amongst mobile and fixed line operators'. As per that policy, the new licensees will have the right to interconnect its network with other licensed mobile and fixed networks in Pakistan. It was provided in the policy that as it is important to enable customers to dial from one mobile network to customers on either another mobile network or customers on a fixed network at reasonable retail rates, therefore, to achieve this the mobile operators must be free to decide and make connection to, the most economic point of interconnection with other operators and the mobile operators will have the right to request leased lines from LDI operators. The interconnection with PTCL will be covered by the Reference Interconnection Officer prepared by PTCL under the interconnection guidelines[92].

Mobile interconnection termination charges will not exceed the existing level until cost-based rates are available for both fixed and mobile operators and PTA to set rates before the end of 2004 based upon its view of termination costs by existing operators. All the operators were required to

[91] Ibid.
[92] Mobile Cellular Policy issued by govt. of Pakistan in Jan, 2004: http://www.pta.gov.pk/media/MCP.pdf.

provide the PTA with evidence of cost for interconnection termination rates within 12 months of beginning their operations[93].

3.2.3 Interconnection Guidelines, 2004

In exercise of the powers conferred under section 5(2)(h) of the Pakistan Telecommunication (Re-organization) Act, 1996 the Pakistan Telecommunication Authority issued Guidelines in respect of interconnection arrangements.

In those guidelines, definition of some important terms is provided. Objectives of Interconnection and principles of interconnection were also provided. Reference interconnect offer and the procedure of interconnection were also provided in the guidelines[94].

3.2.5 Interconnection Dispute Resolution Regulations, 2004

Vide S.R.O. No. 797(1)2004, in exercise of its powers to formulate regulations with reference to section 5(2) (o) of the Pakistan Telecommunication (Re-Organization) Act, 1996, Pakistan Telecommunication Authority promulgated the regulations for Interconnection Dispute Resolution. Pakistan Telecommunication Authority formulated the Regulations for Dispute Resolution, As per those regulations, any aggrieved operator may file a claim to the Authority regarding alleged

[93] http://www.pta.gov.pk/media/MCP.pdf (15.1.2008).
[94] http://www.pta.gov.pk/media/Interconnection Guidelines 2004.pdf (15.1.2008) Interconnection Guidelines 2004

contravention of other operator to agree on an interconnection arrangement or in respect of a dispute arising out of a subsisting interconnection agreement between the parties[95].

As per regulations, the claim shall be accompanied with an affidavit affirming the accuracy of all factual information to the knowledge of the Claimant. Where averments are made on the basis of information and belief of the Claimant, the affidavit shall disclose the source of such information and belief.

The claim should contain the grounds on which the Claimant believes the Respondent is acting illegally or unreasonably- relevant provisions of the Act, the rules and regulations made there under, the licenses, guidelines, citations of superior court decisions, other statutory provisions, international regulatory practices, etc, relied on- where relief sought consists of terms of interconnection, the proposed provisions of the interconnection agreement to be attached as an annex - where relief sought is financial in nature, calculations or economic analysis to be appended[96].

As per those dispute resolution guidelines, when a claim is admitted by the authority, it shall designate a case management team comprising of not less than two members. The case management team shall manage and progress the proceedings. If the Authority considers that negotiations may enable the

[95] http://www.pta.gov.pk/media/Interconnection Dispute Resolution.pdf (11.1.2008)
[96] Ibid.

parties to reach agreement, it may, instead of admitting the Claim for hearing, direct the parties to enter into negotiations[97].

Forthwith upon admission of a Claim for hearing: a copy of the Claim shall be served by the case management team on the Respondent with a direction to submit a Reply within fifteen Days and the claim for hearing, shall be notified by the case management team to the parties for the first hearing; and the parties shall file, at least three days before the date of the first hearing: (i) a statement of objections to admissibility of evidence relied on by the other party; and (ii) a statement of the understanding reached between the parties, if any, by that date[98].

The Reply shall be accompanied with an affidavit affirming the accuracy of all factual information to the knowledge of the Respondent. Where averments are made on the basis of information and belief of the Respondent, the affidavit shall disclose the source of such information and belief[99].

At the first hearing, the presiding officer shall invite the parties to refer to the then current version of the guidelines made by the Authority under clause (h) of sub-section (2) of section 5 of the Act[100].The presiding officer may indicate the likely views of the Authority on particular matters arising out of the pleadings, provided that, such views shall not be binding on the

[97] Ibid.
[98] Ibid.
[99] Ibid.
[100] Pakistan Telecommunication (Re-Organization) Act, 1996.

Authority nor shall the Authority be precluded from confirming, modifying or abandoning such views in its final decision[101].

If the parties are unable to reach agreement at the conclusion of the first hearing, the proceedings shall stand adjourned for a date to be notified subsequently by the case management team. In the interim, the parties may reach agreement and shall in such case file a copy of their agreement with the Authority[102].

The case management team shall notify the parties of a date, hereinafter referred to as the 'final hearing date', for final hearing to be held not later than the thirtieth day. The final hearing date shall be notified to the parties by the seventh day and the Authority shall, after considering the comments of the parties on the scope of dispute settle and circulate the final version of the scope of dispute to the parties not later than the twenty-first day[103].

At the final hearing, the parties shall state their positions by referring to their pleadings in the context of the scope of dispute. A party may address oral arguments only on matters announced by the presiding officer at the outset of the final hearing as requiring oral arguments. All matters sufficiently expressed in the pleadings shall be considered heard by the Authority, notwithstanding absence of oral reiteration or argument thereon. The final hearing if not concluded on the same day shall stand adjourned for the next

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[101] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf (25.11.2007) Interconnection Guidelines, 2004

[102] Ibid.
[103] Ibid.

day and shall continue on a day-to-day basis, provided that, no hearing shall continue for more than three days.

The final decision of the Authority shall be announced not later than the sixtieth day. The final decision may specify the time limit within which compliance therewith is to be reported to the Authority. A party failing to comply with the final decision within the time limit specified therein may be proceeded against under section 23 of the Act if the non-compliance amounts to contravention of the provisions of the Act, the rules made there under or any term or condition of such party's license. The final decision may identify the relevant provisions of the Act, the rules or the license, which in the opinion of the Authority would stand contravened on failure of a party to comply with the final decision[104].

The Authority may issue interim orders for implementation pending the final decision directing a party to the proceedings to do or refrain from doing any act or thing; direct any person in control or possession of any information considered relevant to the proceedings to furnish the information at the time and place stated in the direction; direct that a person obstructing the proceedings be proceeded against under section 186 of the Pakistan Penal Code (Act XLV of 1860)[105]; give an oral or written direction to the parties or any person not to divulge or communicate, without written permission of the Authority, to anyone specified information that was given to or received by the party or person in the course of the proceedings; direct that any evidence proposed to be given at a hearing or conference be taken

[104] Ibid.

[105] Pakistan Penal Code (Act XLV of 1860).

under oath administered by the presiding officer or a member of the case management team; review, modify, amend or supplement any directions previously given; and generally give all such directions and do all such things as are necessary or expedient for the prompt, equitable, non-discriminatory, consistent and transparent conduct of the proceedings.

The Authority may invite public comment on any matters of sufficient public importance arising in any proceedings and may, subject to an opportunity to the parties to review and comment, make use of public comments in its decisions[106].

3.2.5 Reference Interconnect Offer (RIO)

The operator with significant market power (SMP) is obliged to prepare and submit its RIO to the Authority within one month of its determination as SMP operator by the Authority. The SMP operator shall make the RIO publicly available within seven days after approval from the Authority[107].

The RIO shall include, as far as possible, the terms listed in Annexure- I to the guidelines issued by PTA and it is the PTA to decide amendments to be made in RIO considering the principles mentioned in those Guidelines.

The requesting operator may adopt RIO in full, or may request for some modifications subject to the approval of the Authority[108].

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[106] PTA Guidelines for Interconnection Dispute Resolution: http://www.pta.gov.pk (25.10.2007)
[107] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf (25.11.2007) Interconnection Guidelines, 2004
[108] Ibid.

3.2.6 Pakistan Telecommunication Rules 2000

Chapter III of the rules[109] deals with interconnection and the same is re-produced hereunder:-

"Each operator hereinafter referred to as the "relevant operator", shall, on the request of another operator, negotiate an agreement to interconnect that other operator's telecommunication system to its telecommunication system[110].

The relevant operator shall make reasonable endeavors to provide to the other operator a point of connection at the switches requested by the other operator in a manner which shall be agreed from time to time between the relevant operator and the other operator and which duly takes account of what is technically feasible given the functionality of the respective networks of the relevant operator and of the other operator from time to time.

Network Connection Equipment, where reasonably practicable, shall, if requested by an operator, be located within the same space in order to maximize the efficient use of space in the relevant operator's premises and to minimize the cost and inconvenience to the relevant operator and the other operator. If the relevant operator demonstrates that physical co-location is not reasonably practicable, the relevant operator shall, if requested, instead

[109] http://www.pta.gov.pk/media/rules.pdf: (12.12.2007) Pakistan Telecommunication Rules.

[110] Ibid

offer interconnection on terms equivalent to physical co-location in terms of economic, operational and technical conditions by a date as soon as reasonably practicable which shall be agreed between the relevant operator and the other operator. All costs associated with the provision of equipment and space by the relevant operator in satisfaction of these requirements shall be included in the charges permitted under rule 16[111].

A relevant operator shall enter into an interconnection agreement with another operator within ninety days from the request from that other operator. Interconnection pursuant to any interconnection agreement shall be carried out as soon as practicable but, in any event, within thirty days from the date when that agreement is entered into[112].

The relevant operator and the other operator shall comply with all relevant international standards, including, without limitation, those of the International Telecommunication Union.

The terms and conditions of interconnection agreements shall be those agreed to between the relevant operator and the other operator.

If the relevant operator and the other operator cannot agree on the terms and conditions of the proposed interconnection agreement within sixty days after the request for such interconnection, either party may refer the matter to the Authority by notice in writing[113].

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[111] Ibid
[112] Ibid.
[113] Ibid.

The Authority shall fix a date for a hearing to be held not later than thirty days and shall notify that date to the parties by notice in writing at least seven days prior to that date. The notice shall require the parties to attend the offices of the Authority at the time and on the date specified in the notice and shall require each party to submit a written statement of the understanding reached between it and the other party to date at least three days before to the date of the hearing[114].

(9) At the hearing held pursuant to sub-rule (8) the Authority shall give the parties an opportunity to state their positions in respect of the matters as to which they have been unable to reach agreement and shall provide them with guidelines prepared by it under clause (h) of sub-section (2) of the section 5 of the Act. If the parties are able to reach an agreement as to the terms and conditions of the proposed interconnection agreement the relevant operator and the other operator shall, within fourteen days after the hearing, enter into an interconnection agreement on those terms and conditions[115].

If the parties are unable to reach agreement as to the terms and conditions of the proposed interconnection agreement or if the parties fail to enter into an interconnection agreement within fourteen days the Authority shall examine the matter and may decide to hold another hearing hereinafter referred to as a "final hearing" within thirty days. The Authority shall give the parties at least seven days prior written notice of the final hearing at which the Authority shall give the parties the opportunity to state their positions. After due consideration of the submissions made by the parties the Authority shall

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[114] Ibid.
[115] Ibid.

determine the terms and conditions on which the relevant operator and the other operator shall enter into an interconnection agreement and notify those terms and conditions in writing to them within thirty days after the date of the hearing and such determination shall be final and binding[116].

If a dispute arises between parties to an interconnection agreement in relation to that interconnection agreement, then either party may refer the dispute to the Authority who shall determine that dispute by written notice, within ninety days after receipt of the notice and the determination of the Authority shall be final and binding. Neither party may refer a dispute to the Authority if the interconnection agreement contains a reasonable, independent and legally binding dispute resolution mechanism and any question as to whether such a mechanism is contained within the interconnection agreement shall be determined by the Authority following consultation with the parties to that interconnection agreement[117].

The relevant operator and the other operator shall within thirty days after the request for interconnection provide each other with relevant information concerning the technical network aspects of their respective telecommunication systems which is reasonably requested and necessary to enable points of connection to be established together with information concerning any proposed modifications or additions to their respective telecommunication systems relevant to interconnection, and relevant to the

[116] Ibid.
[117] Ibid.

operations of their respective telecommunication systems relating to the proposed modifications or additions to those systems[118].

Each relevant operator shall submit to the Authority any interconnection agreements to which it is a party within seven days after entering into that interconnection agreement. If an interconnection agreement to which a relevant operator is a party is amended, that relevant operator shall submit that interconnection agreement to the Authority within seven days after the amendment has been made[119].

The Authority shall publish all interconnection agreements submitted to it in such manner as it may determine. However, the Authority shall keep confidential any sections of interconnection agreements, which are reasonably notified by a party to the relevant interconnection agreement to the Authority as containing information the disclosure of which would have the potential to seriously and prejudicially affect its interests.

If the Authority determines that an interconnection agreement is not in compliance with the Act, any rules or terms of a licence granted to an operator which is a party to the interconnection agreement it shall notify the parties to the interconnection agreement of its determination within sixty days after the submission of the interconnection agreement to it or if the determination follows a written notification by an operator to the Authority, within sixty days after that notification. The Authority's notification shall set out the basis for the determination and require the parties to amend the

[118] Rule 15 of Ibid Rules.
[119] Ibid.

interconnection agreement within fourteen days. If the parties are unable to reach agreement on the terms and conditions of an interconnection agreement the determination of the Authority under sub-rule (10) of rule 13 shall apply.

The Authority may require any operator to submit to the Authority, in the manner and at the times directed by the Authority, any information which the Authority may reasonably require for the purposes of carrying out its functions under these rules[120].

3.3 SMP's obligations regarding Interconnection

As per section 17 of the Pakistan Telecommunication Rules, the definition of SMP (Significant Market Power) is provided as: An operator shall be presumed to have significant market power when it has a share of more than twenty-five per cent of a particular telecommunication market. The relevant market for these purposes shall be based on sector revenues[121].

The Authority may, notwithstanding sub-rule (1), determine that an operator with a market share of less than twenty-five percent of the relevant market has significant market power. It may also determine that an operator with a market share of more than twenty-five per cent of the relevant market does not have significant market power. In each case, the authority shall take into account the operators' ability t influence market conditions, its turnover relative to the size of the relevant market, its control of the

[120] Ibid.
[121] http://www.pta.gov.pk/media/rules.pdf: (12.12.2007) Pakistan Telecommunication Rules, 2000

means of access to customers, its access to financial resources and its experience in providing telecommunication services and products in the relevant market.

As per Mobile Cellular Policy issued by the Government of Pakistan in the year 2004, it was mentioned that the Government believes that the success of market liberalization depends on the development of a fair competitive environment for all licensees and in that regard, mobile and fixed line licensees who emerge with significant market power shall be prohibited from abusing their dominant positions through anticompetitive conduct. PTA will incorporate provisions of anti-competitive practices in the licenses for SMP(s). Operators with SMP will also have to produce a Reference Interconnection Offer (RIO) detailing the services and tariffs they provide to other licensed operators.

3.4 General contents of interconnection agreement

The contents of interconnection agreements vary considerably. Much depends on the regulatory framework. If the existing regulatory framework provides sufficient detail on the terms and conditions of interconnection, then interconnection agreements can be shorter. The same is true if an incumbent operator, or an industry group, has published detailed interconnection tariffs, technical standards, procedures, etc., which can be incorporated into an agreement. In other cases, interconnection agreements must be more comprehensive. Generally the interconnection agreement should include the contents as per following table[122]:-

Contents	Detail and Comments

[122] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Chapter 3.1.7)

Interpretation	
Recitals	Whereas clauses add historical and legal context to assist understanding by future readers of agreement
Definition of Key Terms	Terminology varies significantly among different countries and operators It is important to ensure compatibility of terminology to the local environment when adapting interconnection agreements from other countries. Definitions in other documents may be referenced, e.g., definitions in laws or regulations, regulatory guidelines, ITU definitions
Scope of Interconnection	
Description of Scope and purpose of Interconnection	Different types of interconnection agreements have different purposes (e.g. two local networks, local to long distance/ international, fixed to mobile, mobile to mobile, local ISP to ISP backbone.) The purpose of some interconnection agreements is to provide termination services or transit services; other involve provision of unbundled facilities etc. Interconnection architecture (annotated diagrams)
Points of Interconnection and Interconnection Facilities	
Points of Interconnection and facility specification	POI locations (e.g. exchanges, meet points) usually listed in an appendix may be modified from time to time. Typically includes exchanges types and street addresses Specific POI facility locations (e.g. digital distribution frame; manho splice box) Description of network facilities to be interconnected (e.g OC-3 fibre optic terminals with interconnecting single-mode optical fibres) Specify capacity and/or traffic volume requirements Indicate which party is to provide which facilities (include diagram of POIs and interconnected facilities)

	Technical specifications; for example; calling line identification, other advanced digital feature and basic and ISDN call control interface specs Local number portability query response network specs
Signaling Interconnection	Specify type of signaling networks/standards Signaling POIs locations to be specified (i.e., Signal Transfer Points) Point Codes to be specified Technical interface specifications (e.g. signaling links to be dedicatec Diagram of signaling interconnection architecture[123].
Network and Facility Changes	
Planning and Forecasts	Requirement for mutual notification of network changes and Capacity forecasts, for example: traffic forecasts for each POI, local number and portability requirements; area code saturation and changes to increased digit phone numbers and default and redundant routing arrangements Periodic network planning reports may be specified.
Facility Ordering Procedures	Specify rights and obligations of each party with respect to ordering and provisioning of interconnection facilities Confidentiality requirements and procedures to ensure same Ensure no anti-competitive use of order information (e.g. no contacts with end users; competitive service divisions of operator receiving orders) Specify points of contact (e.g. interconnection service group, e-mail addresses etc.) Specify order format and procedures (e.g. standard order forms may be utilized in paper or electronic format.)

[123] Ibid.(Ch. 3.1.7)

	Procedures to expedite specific orders Co-ordination process for migration of customers between operators (e.g. coordination of cut-overs to prevent or minimize service interruptions to end users.) Procedures for ordering operator to arrange for all equipment installations and changes at end-user premises Order confirmation and order rejection procedures, timely notification, notifications of additional charges etc. Order completion notification and reporting requirement[124].
Traffic Measurement and Routing	
Traffic Measurement Responsibilities Procedures	Describe party responsible; measurement and reporting procedures Rules for routing of different types of traffic, if any (e.g. Bill and Keep local traffic that is to be terminated reciprocally without charge may be carried on Bill and Keep, trunks, traffic to which termination charges apply may be carried on other trunks, e.g. transit trunks, national traffic trunks, etc.)
Infrastructure sharing and collocation	
Sharing of Infrastructure, Procedures and Cost	Available of poles, conduits, towers, rights of way etc. Procedures, if any, for determining available capacity; procedures for allocating capacity among requesting operators (e.g. first come/first served) Prices and/or costing method Provision and pricing of supplementary services (electrical power, security systems, maintenance and repairs etc.) Sub-licences on property or third parties (e.g. right of way owners,

[124] Ibid. (Ch. 3.1.7)

	municipal and other public and private property owners, where infrastructure is located), insurance and indemnification for damages.
Collocation	Availability of actual or virtual collocation (e.g. for transmission facilities on exchange premises); list of addresses where collocation is available, procedures for determining available space; reservation of expansion space Prices and/or costing method for collocated space Provision and pricing of supplementary services (e.g. electrical power and emergency backup power, lighting, heating and air conditioning, security and alarm systems, maintenance and janitorial services etc) Procedures for ensuring access to and security of collocated facilities (notification; supervised repair and provisioning work and/or separated premises etc[125]) Negotiation of other lease and/or licence arrangements, including issues of sub-licences on property of third parties (e.g. building owners, right of way owners, municipal and other public property owners), insurance and indemnification for damages.
Billing	
Scope of billing arrangements responsibilities	May include different arrangements, for example; operators billing each other for interconnection services and performance of billing functions by some operators for others.
Billing procedures	Interconnection billing media- discs, tapes, paper and/or electronic transfers; format and software specifications Guidelines for production of interconnection billing outputs Customer service record Retention period for billing data
Payment terms and Conditions	Billing fees and related charges

[125] Ibid.(Ch. 3.1.7)

	Payment terms and conditions, including late payment penalties, service disruption credits, etc.
Billing disputes reconciliation Procedures	Contact details for reconciliation and billing queries Responsibilities to provide back-up records Notification of billing disputes Initial resolution procedures Final resolution (referral to arbitration, regulator or courts)
Quality of service/performance and trouble reports	
Quality of Service	Service performance standards may be specified in appendix; for example average time for provisioning interconnection circuits, percentatage of interconnection cut-overs made on scheduled dates, comparative provisioning performance for competitors and self and switching and transmission quality measures on interconnected circuits
Testing & Maintenance	Right to make reasonable tests, and to schedule service interruptions; procedures to minimize disruption
Trouble Reports	Procedure for trouble reports; notice periods; response time standards Duty to investigate own network before reporting faults to interconnecting operator Responsibility for costs incurred to second operator in investigating faults subsequently found to exist in first operator's network and calculation of charges for investigating trouble reports
System Protection And Safety Measures	Responsibilities of parties to take necessary precautions to prevent interference with, or interruptions of, other parties netwoks or customers
Interchange and Treatment Information	
Data Interchange Format	Method and format of data interchange between carriers, including data interfaces, software, forms, etc
Data to be exchanges	Specify all data types and systems for which data is to be interchanged,
Access to and use of Customer	Confidentiality procedures for customers information including establishment of separate interconnection service group;

Information	confidentiality forms to be completed and procedures to ensure protection of customer privacy
Access to and Operator Information	Confidentiality procedures Intellectual property rights
Equal access procedures	
Equal Access procedures	Procedures depend on equal access approach Authentication and measures to prevent unauthorized customer transfers Penalties for unauthorized customer transfers Methods of reporting customer transfers Order confirmation procedure[126]. Schedule to implement transfers Procedures to implement transfers Dispute resolution process Procedures for dealing with disputed customers
Ancillary Services	
Operator assistance	Types of operator assistance services to be provided, including directory assistance, translation services, fault report routing etc Call handling and operations procedures Fees and billing procedures
Other Ancillary Services	Subscriber listings in telephone directories Information and billing inserts Repair and maintenance services

[126] Ibid.(Ch. 3.1.7)

	Other services provided by one or other operators to increase mutual operating efficiencies
Termination	
Grounds for Termination and Restrictions	Termination may only be permitted subject to certain restrictions (e.g. regulatory approval for termination of interconnection by incumbent operator) Grounds for termination by incumbent may include regulatory or court orders; bankruptcy, insolvency and cessation of business Fewer, if any, termination restrictions in competitive markets, and by non-dominant operators
Termination Procedures	Advancednotice requirements Payment of non-recoverable interconnection costs incurred by disconnected operator Computation and payment schedule for disconnection costs Dealings with end-users, communications restrictions, etc. Disconnection cutover procedures
Other provisions	
Force majeure	List of conditions for which non-performance of interconnection agreement obligations will be excused
Assignment	Rights of assignment and restrictions on same (e.g. consent or regulatory approval requirements)
Applicable laws	Agreement to be governed by, and interpreted in accordance with, the laws of relevant jurisdiction
Regulatory approvals	Specify regulatory approvals required for effectiveness and/or renewal, amendment, termination, etc. of agreement
Breach of agreement	Remedies and penalties Liabilities, indemnification and limitation of liabilities
Legal interpretation	Standard provisions for legal interpretation and enforcement of agreement (e.e.g entire agreement clause, effect of unenforceable terms, cumulative rights and remedies etc.)
Dispute resolution	Procedures for resolution of disputes under agreement that are

	not specifically dealt with elsewhere
Term	Duration of term Renewal rights and procedures
Amendment	Review and re-negotiation procedures Impact of regulatory changes[127].

In Annexure I of the PTA Guidelines for interconnection, it is provided that the following terms should be included as far as possible in the Reference Interconnect Offer or interconnect agreements[128]:-

Interpretation

1. Recitals
2. Definitions of Key Terms

Scope of Interconnection

3. Description of Scope and Purpose of Interconnection

POIs and Interconnection Facilities

4. Points of Interconnection (POIs) and Related Facility Specifications
5. Signaling Interconnection

Network and Facility Changes

6. Planning and Forecasts
7. Facility Ordering Procedures

Traffic Measurement and Routing

8. Traffic Measurement Responsibilities and Procedures

Infrastructure Sharing and Co-Location

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[127] Ibid.(Ch. 3.1.7)
[128] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf

9. Sharing of Infrastructure, Procedure and Costs
10. Co-location

Billing

11. Scope of Billing Arrangements and Responsibilities
12. Billing Procedures
13. Payment Terms and Conditions
14. Billing Disputes and Reconciliation Procedures

Quality of Service/Performance and Trouble Reports

15. Quality of Service
16. Testing and Maintenance
17. Trouble Reports
18. System Protection and Safety Measures

Interchange and Treatment of Information

19. Data Interchange Format
20. Data to be Exchanged[129].
21. Access to and Use of Customer Information
22. Access to and Use of Operator Information.

Equal Access and Customer Transfer

23. Equal Access Procedures

Ancillary Services

24. Operator-Assistance
25. Other Ancillary Services

Termination

26. Grounds for Termination and Restrictions
27. Termination Procedures

Other Provisions

[129] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf

28. Force Majeure
29. Assignment
30. Applicable Laws
31. Regulatory Approvals
32. Breach of Agreement
33. Legal Interpretation
34. Dispute Resolution
35. Term of Agreement
36. Amendments

3.5 Infrastructure Sharing and Collocation

Passive infrastructure sharing is a service that the operator of a public telecommunication network offers to another such operator so as to allow the latter to offer its services without duplicating the competitor's existing infrastructure. It may involve pylons, posts, ducts, and so on. Access to passive infrastructure and elevated points is very attractive, in that the operators of public telecommunication networks can deploy their networks rapidly and under favourable economic and environmental conditions. To do so, it is necessary to share the infrastructures of competitor operators. Likewise of great interest for the development of competition is the need for operators of public networks to have access to surplus capacity in the form of alternative infrastructure that may be available from the holders of public service concessions, electricity and water utilities, as well as rail

transportation companies (bare cable access), which may include public and private-sector entities alike[130].

Co-location is an essential service for unbundling and for network interconnection. Co-location is one of the methods of obtaining physical interconnection between the networks. The operator wishing to set up the interconnection links itself and sets its own equipment on the premises of the operator who is offering the service[131].

Physical co-location involves the installation of competing operators in the vicinity of the host operator's equipment and on the latter's premises; the two sets of equipment, that of the host and that of the guest, remain distinct. The guest operator maintains its own equipment.

Where this is not an option, there are two other possibilities for co-location:
Virtual co-location consists of installing the competing operator's equipment on the premises of the host providing interconnection, together with the latter's equipment, but with no physical separation. Maintenance is carried out by the host operator for the guest operator. This is also known as co mingling. This form of co-location involves significantly lower costs and shorter lead times than is the case with traditional co-location. For this reason it is very attractive for the non-incumbents wherever it is feasible.
• In-span co-location involves the connection point being situated between the two interconnected operators. The guest operator's interconnection link is

[130] Introduction to Interconnection and Access by Dr. Zouakia Rochdi.(Ch. B1.3-page 9)

[131] Ibid.

connected to that of the host operator, at the interconnection point or the splitter at the self-contained routing centre. The interconnection point belongs to the host operator, which is responsible for maintenance. It may be created specially for the purposes of co-location, or use may be made of the nearest facility from the host operator's automatic exchange[132].

In the case of access to high-speed services by means of unbundling, co-location makes it possible to host DSL equipment. The host operator must grant access to the premises and ensure power and cooling.

[132] Ibid.

Chapter No.4

Principles of interconnection

4.1 Principles of Interconnection

Interconnection of telecommunications networks has been important for a century, but never more so than today. Originally, operators interconnected with neighboring operators. However, these operators retained monopolies over all networks and equipment in their geographic serving areas. For decades, few other types of interconnection occurred.[133].

Beginning in the 1970s, customers began to interconnect a growing range of terminal equipment and private network facilities to the incumbent operator's facilities. With the liberalization of telecommunications markets over the last few decades, effective interconnection arrangements have become key to the operations of an increasingly wide range of services. These services include local, long distance and international fixed, mobile and satellite services, providing everything from basic voice telephony to high speed internet connectivity to Internet multimedia services[134].

Competition is the key to the growth and innovation of today's telecommunications markets. Interconnection is a critical factor for the viability of competition. For most of the history of telecommunications,

[133] Telecommunications Regulation Handbook: published by the infoDev program of the WorldBank. (Ch. 3.1.1)
[134] Ibid.

operators and government administrations negotiated with each other to set the terms of interconnection without regulatory intervention. The emergence of competition has changed this. Incumbent operators have little incentive to make things easy for their new competitors, and most of the bargaining power in negotiations lies with the incumbents[135].

Strategic anti-competitive behaviour on interconnection matters by incumbents has retarded or prevented competition in many telecommunications market around the world. Incumbents can engage in a wide range of behaviour to frustrate effective competition. For example, they can charge excessive rates for interconnection, refuse to build or make available adequate interconnection capacity, and refuse to unbundled network elements or services necessary for efficient interconnection. New entrants in telecommunications markets have little to offer in negotiations to remove these barriers to competition. They, there is a consensus among telecommunications experts and policy makers that decisive and informed guidance by regulators is required to pave the way for effective interconnection arrangements.

Interconnection is an important consumer issue. Telecommunications users cannot communicate with each other or connect with services they demand unless necessary interconnection arrangements are in place. Interconnection of a multitude of different types of networks has brought tremendous benefits to consumers and businesses around the world in the last decade. Without efficient interconnection arrangements, services such as direct

[135] Telecommunications Regulation Handbook published by the InfoDev program of the World Bank. (Ch. 3.1.1)

international dialing, all Internet-delivered services, automated teller machines and e-commerce would not be possible[136].

Increasing network interconnection will continue to improve the convenience and utility of telecommunications service for users around the world in the next decade. Inadequate interconnection arrangements not only impose unnecessary costs and technical problems on operators- they also result in delays, inconvenience and additional costs for businesses, consumers and, ultimately, for national economies.[137].

According to ITU surveys, interconnection-related issues are ranked by many countries as the single most important problem in the development of a competitive marketplace for telecommunications services; interconnection has been a highly contentious issue in Europe. Almost half of all countries in Asia-Pacific region indicated that interconnection issues were a top regulatory priority. While fewer countries in the Arab states (20%) and Americas (30%) pointed to interconnection as a regulatory priority, the general level of network competition was still low in those regions. That is changing. The importance of interconnection issues will increase in all regions as network competition develops.

The summary of some widely accepted interconnection principles could be given as under[138]:-

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[136] Ibid.
[137] Ibid. (Ch. 3.1.1)
[138] Ibid. (Box 3-3 on page 3-9)

- Terms of interconnection should not discriminate unduly between operators of between a dominant firm's own operations and those of interconnecting competitors.
- Interconnection should be permitted at any technically feasible point but the requesting operator should pay any additional costs of non-standard interconnection
- Interconnection charges should generally be cost-based (i.e., the evolving best practice specifies that the cost standard should be forward-looking long-run incremental costs; there is normally a mark-up to cover forward-looking joint and common costs)
- Cost inefficiencies of incumbent operators should not be passed on through charges to interconnecting operators
- Where reciprocal interconnection and costs can be expected to be reasonably balance, bill and keep arrangements are an efficient alternative to cost-based interconnection
- Regulatory guidelines and procedures should be prescribed in advance to facilitate interconnection
- Standard terms and procedures should be published for interconnection to dominant operators.
- Interconnection procedures and arrangements should be transparent
- Interconnection arrangements should encourage efficient and sustainable competition
- Network elements should be unbundled, and charged separately
- Charges related to universal service obligations should be identified separately and not bundled with interconnection charges

- An independent regulator (or other third party) should resolve interconnection disputes quickly and fairly.

As per Interconnection Guidelines issued by Pakistan Telecommunication Authority, the principles of interconnection are as under[139]:-

- All operators are obliged to provide interconnection to other operators desiring to interconnect. Interconnection shall be permitted at any technically and economically feasible point. In case the requesting operator requires access from any other point, he shall undertake the additional cost.
- Interconnection and related services and facilities shall be provided on the basis of unbundled network elements and charged accordingly. A requesting operator shall only pay for the network components or facilities of the interconnection that it requires.
- The operators shall not unfairly discriminate the terms of interconnection among different operators. An operator shall offer same interconnection terms to other operators as compared to his own similar operations or affiliates.
- The interconnection terms of all operators, other than the terms of confidential nature as determined by the Authority, shall be open to access to all licensed operators.
- Charges for interconnection services shall be cost-oriented.
- The operator that causes a cost for interconnection services shall pay for that cost to the other operator when interconnecting.
- Cost of inefficiencies of an operator should not be passed on to other operators through higher interconnection charges.
- Interconnection arrangements should encourage efficient and sustainable competition.
- Charges relating to USO and APC should be identified separately, and not bundled with interconnection charges[140].

[139] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf (11-12-2008) Interconnection Guidelines 2004.

4.2 Interconnection issues.

Interconnection is defined in different ways in the different regulatory and policy regimes that deal with it. As per definition available in Article 2 – CEC (2000d), interconnection means "the physical and logical linking of public electronic communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with the users of the same or another undertaking, or to access services provided by another undertaking. Services may be provided by the parties involved or other parties who have access to the network."

The above definition differs from others in that it includes interconnection of networks used by the same undertaking and not just networks of different operators. The term "access" means the making available of facilities or services, to another undertaking, under defined conditions, on either an exclusive or non-exclusive basis, for the purposes of providing electronic communications services which covers inter-alia; access to network elements and associated facilities and services which may involve the connection of equipment by wire or wireless means; access to physical infrastructure including buildings, ducts and masts; access to software systems, including operational support systems; access to number translation or systems offering equivalent functionality; access to mobile networks, in particular for roaming; and access to conditional access systems for digital television services.

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[140]Ibid.

Interconnection is a specific type of access implemented between public network operators.

Some key interconnection issues may be classified in the following three categories[141]:-

4.2.1 Framework and procedural issues

- Adequacy of regulatory guidance for interconnection negotiations
- Availability of interconnection with incumbent operators for various types of services
- Access to standard interconnection terms with incumbent operator
- Independent and timely dispute resolution
- Non-discriminatory access to interconnection facilities and service
- Access to PSTN network specifications (including planned network changes)
- Treatment of Universal Service, Universal Access or Access Deficit Charges

4.2.2Commercial Issues

[141] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Box-3-1 at page 3-4)

- Level and structure of interconnection charges; basis for calculation (i.e., type of costs used to calculate charges, revenue sharing, bill and keep etc.)
- Unbundling of interconnection charges for different network components and related services
- Resale of network facilities and services
- Payment for network modifications to facilitate interconnection
- Confidential treatment of competitive and customer information[142]

4.2.3Technical and Operational Issues

- Open network standards and technical compatibility
- Location of points of interconnection (POI)
- Access to signaling systems, advanced digital features, billing system, operations support systems, call-related databases and other software to provide advanced services.
- Access to unbundled network components, including local loops
- Equal ease of customer access o competitive networks (e.g. customer dialing party)
- Access to numbers and implementation of number portability
- Collocation and sharing of infrastructure (e.g. buildings, poles, conduits, ducts, towers)

[142] Ibid.

- Quality of interconnection, including availability of sufficient interconnection capacity to avoid congestion, and to ensure the timely provisioning of interconnection services and facilities.

4.3 Regional as well as international interconnection rules

In recent years, the development of regional trading areas and the implementation of multilateral trade agreements have accelerated the liberalization of interconnection policies. A leading example is the 1997 European Interconnection Directive (97/33/EC); it contains rules specifically aimed at liberalizing national interconnection regimes. The Directive requires interconnection arrangements to be public and non-discriminatory. It also requires interconnection charges to be cost-based. Related EU Directives supplement and amend the European interconnection regulatory framework. These directives include obligations on special access and provision of leased transmission capacity[143].

The provision of the European Directives related to interconnection are fairly general in nature. This approach permits adaptation to the EU's different national legal regimes and regulatory frameworks. The European Commission has taken additional steps, beyond the Directives, to improve interconnection arrangements. One such step is the publication of 'best current practice' interconnection rates. These interconnection rates are significantly lower than those of some other countries, suggesting that these countries should take action to meet international cost benchmarks. Another

[143] Ibid. (Ch. 3.1.4)

major step was the recent adoption of rules and a proposed regulation to require unbundling of the local loop[144].

[144] Ibid.

Chapter No.5

Procedure for Interconnection

5.1 Establishing interconnection arrangements

A variety of different approaches have been used to establish interconnection arrangements. The main approaches are listed below. Combinations of these approaches have been used in different countries at different times.

- Regulatory prescription (ex-ante) or interconnection arrangements
- Negotiations between operators
- Establishment of general regulatory guidelines for operators to negotiate
- Regulatory mediation to facilitate operator-negotiated agreements
- Regulatory prescription (ex-ante) of default interconnection arrangements, for example, based on other jurisdiction that will apply if negotiations fail.
- Regulatory decisions to resolve interconnection disputes
- Independent arbitration or mediation of interconnection disputes
- Regulatory review, variation and approval of negotiated arrangements[145].

[145] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Ch. 3.2.I)

5.2 Negotiations on interconnection agreements

In many countries, industry negotiation has been the main approach to establishing interconnection arrangements. Operators understand their networks and operational requirements better than regulators, and they have the technical information required to implement effective interconnection arrangements. However, without regulatory intervention and direction, interconnection negotiations do not usually proceed successfully. Incumbent operators are generally suspicious that interconnecting operators will seek subsidized access to their extensive existing networks. Indeed, interconnection at almost any price is less expensive for a new entrant than duplicating major parts of the PSTN. However, the purposes of interconnection include minimization of total network costs, and speedy introduction of competition and rollout of new services, such as broadband access services. Interconnection obligations must often be imposed on incumbents, whether or not they agree with them, in order to promote sector development[146].

Some incumbents may also act strategically during the course of negotiations to implement arrangements that can effectively prevent or hinder competitive entry. Consequently, regulators must find ways to overcome incumbents' reluctance to interconnect their network to new competitors' networks on efficient, cost-based terms and conditions[147].

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[146] Ibid.(Ch. 3.2.2)
[147] Ibid.

Despite encouragement from governments and regulators, the reality is that dominant incumbents have little incentive to enter into agreements that expedite competitive entry by interconne3cting operators. Incumbent operators hold all the bargaining power in negotiations. New entrants have little to offer in exchange for favourable interconnection terms. They can promise market expansion, which should benefit all operators. However, most incumbents see this benefit as being outweighed by the loss of existing markets to new entrants.

Delays and failure have characterized many interconnection negotiations. In some of these situations, regulators subsequently realized that delays and disputes could have been resolved by appropriate regulatory intervention. For example, regulators could have applied benchmarks or best practices from other countries. In other cases, while negotiations did produce interconnection agreements, these were sometimes one-sided, costly and inefficient. Sometime, new entrants accepted one-sided agreements as the only means available to start up business and avoid bankruptcy[148].

As a result of this experience, many regulators and interconnection experts have concluded that it is generally impractical to direct dominant incumbents to negotiate interconnection agreements with new entrants, without adequate regulatory guidance. Ex ante regulatory direction and ongoing supervision or mediation are generally required for operators to negotiate reasonable interconnection agreements on a timely basis[149].

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[148] Ibid.
[149] Ibid.

5.3 Number portability

Number portability is defined as the possibility for users to retain the same subscriber number, independently of the operator scheme chosen even in the case of a change of operators. Thus it concerns the freedom of subscribers to keep their numbers when they move their subscription to a new geographic location, change to a different telecommunication network operator, or change their telephone service[150].

5.4 Procedure of interconnection in Pakistan

All licensed operators shall have the right to interconnect with other licensed operators. The requesting operator shall submit its initial demand in writing to the requested operator. To facilitate planning by the requested operator, the following minimum information shall be provided in the request for interconnection[151]:-

a) Corporate name and credentials of the requesting operator;

b) The type(s) of service(s) for which license has been granted to the requesting operator, the license number and the date when license was issued;

[150] Recommendations, Q-series: Number Portability- Scope and capability set 1 architecture.
[151] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf.

c) The type(s) of service(s) for which interconnection is requested;

d) Required number and locations of POIs;

e) Physical nature of the link;

f) Housing aspects of the POI, i.e. location at the requested operator's switching center, or at the requesting operator's own facilities (building, power, etc);

g) Period for which interconnection is required;

h) Details of the requesting operator's technical interfaces, area(s) of operation and network architecture, which would include information such as the requesting operator's intention to lease lines or resell, or to provide its own transmission network;

i) Estimated traffic in Erlangs, type of signaling and other technical information;

j) Any other information, which the requesting operator considers important in planning by the requested operator or in facilitating the interconnection.

The requested operator shall meaningfully respond to the requesting operator in writing. The requested operator shall respond in different scenarios in the following manner:

(a) In case of full acceptance of the interconnection request, the requested operator shall convey its acceptance within thirty days giving full detail of negotiation and implementation plan;

(b) In case of partial acceptance, the requested operator shall intimate within twenty-one days showing its such willingness to interconnect along with details of issues and points requires to be negotiated.;

(c) In case of denial of request, in entirety, the requested operator shall respond within fifteen days giving reasons for denial.

The request shall be deemed to have been accepted, if no response is received from the requested operator within thirty days of the submission of the request[152]

The requested operator may deny an interconnection request only on the following grounds:

(a) That the requested operator reasonably believes that the requesting operator will not comply with commercial terms of an interconnection agreement,

(b) That the requested operator is unable to supply the interconnection as requested because it does not have sufficient capacity available,

(c) That the requested operator reasonably believes that the interconnection request would pose a material risk to the safety and integrity of the telecommunication infrastructure of the requested operator,

[152] Ibid.

(d) That the interconnection request is not in the interest of users of the services,

(e) That the interconnection request is not in the interest of the national security and sovereignty of Pakistan.

The requested operator shall communicate the reasons of denial to the requesting operator along with supporting facts. He shall also give the time-line to offer interconnection facilities to the requesting operator, where the denial is temporary.

If the requested operator denies the request partially or completely while the requesting operator feels that the request has been denied unreasonably, the requesting operator may approach the Authority for intervention. The Authority shall adjudicate the matter in the manner as prescribed in Interconnection Disputes Resolution Regulations, 2004.

After receipt of an interconnection request, both parties shall mutually negotiate on interconnection terms and conditions, or adopt RIO, as the case may be. The negotiations shall be completed as soon as possible but not later than ninety days from the date of interconnection request[153].

In case of acceptance of request by the requested operator, both the parties shall agree on a draft for the formal interconnect agreement. This

[153] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf.

interconnect agreement shall be submitted to the Authority within seven days of the signing of the interconnect agreement.

In case of acceptance of request by the requested operator, both the parties shall agree on a draft for the formal interconnect agreement. This interconnect agreement shall be submitted to the Authority within seven days of the signing of the interconnect agreement. The Authority shall approve the draft interconnect agreement within sixty days from the date of its receipt.

The Authority may give regard to the following factors while approving the draft interconnects agreement:

a) The interconnect agreement is not in breach of the Act, the Rules, the Regulations, the Policy, these Guidelines, the terms of the operator's license, any relevant determination of the Authority and other relevant laws of Pakistan;

b) The interconnect agreement is consistent with the objectives of the Telecommunication Policy; and

c) The interconnect agreement is not materially detrimental to the interests of any other licensed operator and the users of telecommunication services.

Upon receipt of approval from the Authority the parties to the agreement shall sign the interconnect agreement duly prepared on the stamp paper and submit a certified copy to the Authority within seven days of signing the agreement[154].

In case the Authority does not approve the draft agreement, it shall inform the parties in writing within sixty days giving reasons for disapproval or detail of deficiencies. However, if the Authority does not formally notify the parties to the interconnect agreement of any deficiencies in the agreement within sixty days, the agreement shall be deemed approved.

The partiers shall, after removal of deficiencies, provide the Authority with new interconnect agreement within fourteen days of the date when the Authority first notify such disapproval.

The interconnection shall be carried out as soon as possible but in any event, within thirty days from the date of approval of interconnect agreement by the Authority[155].

5.5 Role of regulator in interconnection agreements

Once it is decided that regulators should play a role in promoting the successful conclusion of interconnection negotiations, the next question is: how can the regulator intervene most effectively? Regulators have a variety

[154] Ibid.
[155] http://www.pta.gov.pk/media/rules.pdf : Pakistan Telecommunication Rules, 2000.

of tools available to expedite negotiations and to assist in the successful completion of interconnection agreements. Some proven regulatory approaches are as under[156]:-

5.5.1 Establishing guidelines in advance of negotiations:

Interconnection guidelines are a necessary and effective means to promoting good interconnection agreements. The task of developing such guidelines has been made easier for newer regulators due to the growing number of published interconnection principles and guidelines established by other regulators. The increasing availability of precedent interconnection agreements and the development of best practices and benchmark interconnection charges in other countries also make it easier for regulators to establish such guidelines.

5.5.2Setting default interconnection arrangements in advance of negotiations:

Regulatory interconnection guidelines are usually fairly general. As a result, there are often disputes among operators about how best to apply guidelines. This can cause delays and impasses, and the need for further regulatory intervention. One approach to deal with this issue is for the regulator to publish default interconnection arrangements together with guidelines. If the negotiations fail, the default arrangements will apply.

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[156] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Ch. 3.2.3)

5.5.3 Establish deadlines for various stages of the negotiations:

Deadlines should be set at the outset of negotiations for completion of various steps or deliverables. For example, the incumbent might be asked to produce a proposed interconnection agreement in 30 days. Alternatively, deadlines can be proposed as soon as it appears delay will occur. Consequences of the failure to meet the deadlines can include regulatory intervention to impose an agreement and independent mediation or arbitration[157].

5.5.4 Establish Industry Technical Committees:

Bilateral or multilateral industry committees are often the best forum for establishing the details of interconnection arrangements. If negotiations are proceeding smoothly, incumbents and new entrants may take the initiative to delegate the details of technical interconnection arrangements to working groups or committees. However, in some cases, it may be necessary for the regulator to take the initiative to ensure appropriate technical committees are established. In either case, it is usually good practice to set deadlines for reports by such committees.

5.5.5 Incentives to complete interconnection arrangements:

A carrot can be more effective than a stick. Various incentives can often be provided to conclude interconnection agreements. Incumbents depend on

[157] Ibid.

regulators for approvals or actions that can sometimes be linked to the successful conclusion of interconnection arrangements[158].

5.5.6 Appoint mediators or arbitrators:

Where negotiations fail, or where they are likely to fail, success can often be achieved by appointment of a mediator or arbitrator. The two are different in that arbitrators are empowered to make binding decisions where an agreement cannot be reached. Mediators can provide additional information, develop compromises, propose alternatives, and persuade. However, they cannot impose their own decision on the negotiations.

5.5.7 Dispute resolution

The settlement of interconnection disputes is one of a regulatory authority's most important responsibilities. Such disputes have to be settled promptly and in an entirely transparent manner by an independent committee with no vested interest or bias in favour of either party. Such disputes can arise prior to or after signature of the contract. It should be noted that most disputes relate to tariff matters. The regulator, therefore, must have the requisite calculation tools and competence to deal promptly with tariff problems, which can seriously affect the business plan of the injured party. From a regulatory point of view, a referral procedure should be published by the regulatory authority in order to make the dispute settlement procedure transparent both for existing operators and for potential operators, when the market is opened up.

[158] Ibid.

This referral procedure should stipulate: the necessary documents and evidence to be produced; conditions governing receivability; procedure for examination of the dispute, which shall include a conciliation/mediation stage in order to try to resolve the problem amicably; the judgment process and hearing of the two parties to the dispute; provision for external expertise, preferably paid for by the regulator; the maximum time-frame allowed for consideration and resolution of the dispute; the possibility of an action initiated by the authority itself, and of injunction against an operator in the event of serious problems requiring urgent solution[159].

It should also be stressed that, pursuant to the provisions of the WTO General Agreement on Trade in Services, the regulator must be independent and, therefore, the committee that will hand down the decision on the dispute shall be composed of persons appointed *intuiti personae* recognized for their competence, and having no vested interest in any party to the dispute.

5.6 WTO and its guide line in formation of interconnection agreements

Annex to the Fourth Protocol to the GATS Agreement, the 'Agreement on Basic Telecommunications' negotiated under the auspices of the World Trade Organization in February 1997, which came into effect on 1.1.1998. The WTO Regulation Reference Paper forms part of the commitments of most of the original signatories to the Agreement on Basic Telecommunications. Several signatories committed to somewhat different

[159] Ibid.

wording. Others have subsequently committed to implement the regulatory framework set out in the Reference Paper. Following are the salient features of the Reference Paper[160]:-

1. **Competitive safeguards:**

Appropriate measures shall be maintained for the purpose of preventing suppliers who are major supplier from engaging in or continuing anti competitive practices such as engaging in anti-competitive cross-subsidization; using information obtained from competitors with anti-competitive results; and not making available to other services suppliers on a timely basis technical information about essential facilities and commercially relevant information which are necessary for them to provide services.

2. Interconnection

Interconnection with a major supplier to be ensured at any technically feasible point in the network by providing (a) non-discriminatory terms, conditions and rates and of a quality no less favourable than that provided for its own like services or for its subsidiaries or other affiliates; (b) in a timely fashion on terms, conditions and costs oriented rates that are transparent, reasonable, having regard to economic feasibility ad sufficiently unbundled so that the supplier need not pay for network components or facilities that it does not require for the service to be provided; ad (c) upon

[160] WTO reference paper: http://www.wto.org.

request, at points in addition to the network termination points offered to the majority of users, subject to charges hat reflect the cost of construction of necessary facilities.

The procedures applicable for interconnection to a major supplier and its interconnection agreements or a reference interconnection offer to be made publically available. Further a procedure and guidelines for dispute resolution should also to be settled[161].

[161] WTO reference paper: http://www.wto.org.

Chapter No.6

Financial and Technical terms used in interconnection agreements

6.1 Interconnection charges:

Interconnection charges often account for a very significant part of the costs of new telecommunications operators. This is particularly the case with new entrants that do not own end-to-end networks. The level and structure of interconnection charges are, therefore, major determinants of the viability of operators in a competitive telecommunications market.

Over the years, variety of approaches have been used to calculate interconnection charges and generally to determine the financial terms of interconnection. Examples are start-up costs, costs of interconnection links and collocation and infrastructure sharing costs[162].

6.2 Approaches to setting interconnection charges

While there is no single correct approach, there is a consensus among telecommunications and trade experts that the best approaches are cost-based. However, other approaches have their merits in some circumstances.

[162] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000.(Ch.3.3.2)

The following chart would provide an overview of the main approaches used to determine interconnection charges[163]:

Approach	Description and Examples	Comments
Forward Looking Incremental Costs	Charges based on forward-looking costs of facilities and services provided to interconnecting operator. (usually estimated over the long run, i.e., Long Run Incremental Costs or "LRIC" Examples: Australia, Canada, Chile and US local Operators Variations of LRIC include LRAIC, TSLRIC and TELRIC. These approaches include different elements of fixed and common costs (e.g. overheads, and fixed service costs) that are excluded from traditional LRIC analyses. These variations are growing in acceptance as "best practices".	Generally accepted as best practice Approach sends most efficient price signals; based on current technology rather than existing book assets Requires study and some cost and demand estimates Usually leads to lower interconnection rates; this stimulates competition to provides lower revenues to incumbent operator May be substantially out of line with actual book costs of inefficient incumbents Can be inappropriate if end-user prices are seriously unbalanced (e.g. set well below costs and below interconnection

[163] Ibid.

		charges)
Historical Accounting Costs	Charges based on the accounting records of the operator supplying the interconnection facilities or services Generally includes an assignment of direct costs and an allocation of common costs booked in the accounting records Examples: UK, 1995 Japanese system and Sweden	Common practice; less favoured by regulators and experts today Less efficient since historical costs were often incurred less efficiently than those based on current technology and operational circumstances (e.g. privatization) Accounting records often misstate real value of assets; based on subjective accounting policies and political decisions regarding investments Usually requires study to assign/allocate booked cost to interconnection facilities and services.
Sender Keep All (SKA) (Bill and Keep)	No charges payable between interconnecting operators for termination of each other's traffic. Typically, each operator pays for its own facilities up to the point	Works best where the two operators are similarly situated ad exchange approximately the same amount of traffic (e.g. for interconnecting local operators)[164] Charges can apply to

[164] Ibid.(Table 3-3 in chapter 3.3.1)

	of interconnection, plus charges for any unusual costs incurred by the other operators to accommodate its traffic Examples: Indian, US and Canadian local operators, and Indonesian regional operators	compensate for traffic imbalances. Without such charges, SKA can retard financing and development of rural or other services, where there is an imbalance of traffic (i.e., more incoming) Was the main model for interconnection of ISPs in many markets. However, this is changing as larger ISPs, with substantial backbone facilities and reaches, increasingly treat smaller ISPs as customers rather than peers.
Revenue Sharing	Typically, new entrants pay the incumbent operator a share of their revenues from interconnected services (or all services) In some revenue-sharing arrangements, no additional charges are payable between interconnecting operators for termination of each others' traffic; in others,	This approach is simple- no need for cost studies to determine interconnection charges Generally considered non-transparent[165] Potentially inefficient and anti-competitive (i.e., when excessive revenue shares are paid) Sometimes prescribed by governments as the

[165] Ibid.

	additional charges do apply for direct interconnection costs (e.g. transmission links, interconnection interfaces) Examples: Thailand, Indonesia, and China	only basis on which interconnection will be permitted in an otherwise closed market; sometimes treated as a "tax" for doing business in a country. May be a transitional step to a more efficient approach)
Interconnect Charges based on Retail Prices	Interconnection charges based on prices to end users A discount is sometimes applied for inter-operator charges. This can be estimated based on the avoided costs of the supplying operator (e.g. retail billing and marketing costs) Examples: US local resale prices, pre-1995 Japanese approach	Difficult to estimate appropriate discount-may lead to inefficiency (i.e., high discount discourages construction of competitive facilities; low discount undermines financial viability of competition) Specifically rejected in some jurisdictions (e.g. Hong Kong, China which differentiate 'carrier-to-carrier' charges from retail rates)[166]
Other Negotiated Interconnect charges	Interconnection charges have been negotiated between operators based on a wide range of other approaches, some principled, many arbitrary	Efficiency of charges depends on how closely they approximate efficient costs; many negotiated charges include implicit subsidies between operators and customers

[166] Ibid.

	Examples: International accounting rates, and some reseller agreements	Level of negotiated charges often depends on the bargaining power of the operators

6.3. Interconnection charges in Pakistan telecom sector

Interconnection charges are a key factor in determining the structure and the intensity of competition in the liberalized market. Interconnection charges count for a very significant part of the costs of new entrants. The Authority, therefore, shall approve the level and structure of these charges. With reference to Interconnection Guidelines issued by Pakistan Telecommunication Authority[167]. The interconnection charges shall be based on the following principles:

(a) The structure of interconnection charges shall reflect the behavior of the underlying costs. Relevant interconnection costs may have different relationships with interconnection activity i.e. some costs may be fixed while others may vary with usage. To the maximum possible extent, fixed costs shall be recovered through fixed charges while variable costs shall be recovered through a per unit charge related to the underlying activity. Moreover, peak and off-peak charges should be set where there is a significant difference in costs.

(b) Interconnection charges shall be set on objective criteria and follow the principle of transparency and cost orientation. The burden of proof that the charges are derived from relevant costs, including a

[167] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf Interconnection Guidelines 2004.

reasonable rate of return on investment, shall lie with the operator providing interconnection to his network. The Authority has the right to demand full justification for the interconnection charges being demanded by the operator providing interconnection. The interconnecting operator may set and charge different rates, terms and conditions for providing interconnection for different categories of telecommunications services, where such differences can be objectively justified on the basis of the type of interconnection provided. The Authority shall ensure that such differences do not result in distortion of competition.

(c) Interconnection charges shall be sufficiently unbundled to ensure that an operator requesting interconnection is not required to pay for network elements or facilities not required for the service to be provided.

(d) Interconnection charges shall not include hidden cross-subsidies, particularly of anti-competitive nature.

(e) Interconnection charges shall include a fair share of joint and common costs and costs incurred in providing equal access and number portability, and of the cost of ensuring essential requirement[168].

The structure of interconnection charges should be based on the nature of services and facilities provided by the operators and the operator shall charge these services accordingly. Annexure- II sets out the structure of

[168] Ibid

interconnection charges, which may be taken into account by the operators when setting charges for interconnection.

Interconnection charges that do not conform to these Guidelines may be varied by the Authority.

Where adequate cost information is not readily available, the Authority may establish interconnection charges on the basis of benchmarking[169]

6.4 Technical aspect of interconnection agreements

6.4.1 Point of interconnect

As per PTA guidelines for interconnection, the POIs shall be located at any technically and economically feasible point. The requested operators shall provide the time-line for the provision of additional POIs to the requesting operator. Each operator shall be responsible for maintenance of POIs located in his network.

The Authority shall reserve the right to physically inspect any POI and lay down any technical standards, if required.

[169] Ibid.

The Authority may carry out such inspection on its own, or (through notice) accompanied by either or both of the operators. The inspection may be random, periodic, or by exception (for instance, in the case of degradation of network performance due to traffic congestion, etc.)

6.4.2 Local loop unbundling

The local loop is that portion of the telecommunication network that is situated between the end subscriber's telephone connection and the subscriber's local switch. Of course, the subscriber's terminal can just as well be a proprietary exchange (PABX), in the case of a professional or business subscriber, as a telephone, in the case of a residential subscriber.

The definition of unbundling as per PTA Interconnection Guidelines[170] is provision of services by an operator, separately from each other, in a way permitting access to only demanded network components including transmission, switching and interfaces.

6.5 Quality of service to interconnection operators

It is good regulatory policy to require incumbent operators to provide a reasonable quality of interconnection services and facilities. Without such a policy, it would be possible for an incumbent to frustrate a competitor's

[170] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf Interconnection Guidelines 2004.

ability to provide competitively attractive services. For example, if an incumbent connected its own new customers' circuits within days, but delayed connection of a competitor's customers' circuit for months, customers in a hurry would likely choose the incumbent's services.

The WTO Regulation Reference Paper deals with quality of interconnection with major suppliers in signatory countries. It requires interconnection to be ensured under terms and conditions that are no less favourable than those provided for their own similar services. Interconnection must also be no less favourable than that provided to a major supplier's subsidiaries, its other affiliates or to non-affiliated service suppliers[171].

Similar types of policies in many countries require 'non-discriminatory' interconnection by an incumbent. In practice, it is very difficult to ensure the implementation of such policies. Many interconnection complaints of new entrants deal with unequal quality of interconnection as between the incumbent's services and their own.

The practical tools available to a regulator to promote high quality interconnection are;

Establishing interconnection quality of service monitoring requirements;

[171] http://www.wto.org/english/news_e/press97_refpap-e.htm.

Monitoring complaints seriously, and establishing significant penalties for clearly unequal service quality; and establishing an independent interconnection Services Group within the incumbent's organization.

Quality of interconnection services can be monitored by an Interconnection Services Group which should measure quality of service to interconnecting operators, and compare it to the incumbent's self provisioning. For example, it should ensure that new circuits ordered by interconnecting operators are provisioned, on average, within the same number of days as internal orders.

Where interconnection service problems are serious enough to warrant regulatory supervision, regulators can monitor these measures. Regulators may also establish a monitoring regime in advance, to prevent problems. A monitoring regime may require reports from incumbents on the quality of service performance[172].

Interconnection policy in some countries may require an incumbent to provide superior interconnection services to interconnecting operators under some circumstances. For example, it may be useful to require an incumbent to provide interconnecting operators with higher quality service then it normally provides for its own services- if the interconnecting operator is willing to pay for the difference. Such an approach has applications in

[172] Telecommunication Regulations Handbook- of World Bank, edited by Hank Intven Mc Carthy Tetrault-Ist Printing 2000. (Ch. 3.4.9)

industrialized countries seeking to promote the provision of advanced telecommunication services[173].

6.6 Quality of interconnection services

As per Interconnection Guidelines, issued by PTA, the operators shall include in their interconnect agreements minimum standard services levels that reflect best practices and provide reasonable remedies for any failure to meet these service levels[174].

The traffic of the other operator shall not be discriminated in relation to other comparable traffic in the network of an operator.

In the event of equipment failure alternate routing shall be available in either party's networks.

The parties to an interconnection agreement shall comply with relevant standards of the ITU and such other technical standards as the Authority may determine from time to time.

To ensure efficient interconnection arrangements, the interconnecting operator and the interconnected operator shall not withhold information

[173] Ibid.
[174] http://www.pta.gov.pk/media/Interconnection_Guidelines_2004.pdf Interconnection Guidelines 2004.

regarding standards and specifications on the grounds that these are proprietary.

The Authority shall further encourage the operators to establish technical committees to develop specifications, protocols, and procedures for the interconnection arrangements.

Without prejudice to the terms of any licence held by an operator under the Act[175], the quality of interconnection services provided by that relevant operator shall be at least of the same standard and quality as comparable services provided to the relevant operator's own business including, without limitation, in relation to price, quality and the timescale within which interconnection is offered[176].

The relevant operator shall make reasonable endeavors to provide sufficient points of connection and capacity at each point of interconnection to support the grade of service reasonably required by the other operator to meet actual and reasonably forecast demand for its telecommunication services[177].

[175] Pakistan Telecommunication (Re-Organization) Act 1996.
[176] Ibid.
[177] Telecommunication Rules, 2000.

7. CONCLUSION

The global telecommunications sector is undergoing major changes. A service that was once considered to be the sole purview of natural and often government -owned monopolies has been privatized and opened to competition, in response to both technological development and the failure of state-owned telecom entities to satisfy the growing telecommunications needs of users and economies. The advent of competition has been accompanied by the creation of National Regulatory Agencies, charged with the responsibility of facilitating market entry by new players, to guard against anti-competitive practices of incumbent monopoly operators, and ensuring that the benefits of competition are passed on to consumers.

All over the globe the introduction of competition in telecommunications has brought tremendous benefits to both consumers and operators. Competition provides consumers with greater choice of service operators, wider variety of services, significantly improved service quality, and more cost reflective tariffs. For developing countries, added benefits include the attraction of badly needed investment, faster network deployment, and wider consumer coverage. In addition, incumbents and other operators are given incentives to make improvements in their efficiency and to exploit opportunities for growth and innovation.

Interconnection is a necessary condition for effective competition since it enables consumers of one network to be able to successfully complete a call to another consumer or service irrespective of whose network the originator

of the call is using or to whose network the call recipient or service provider is connected to. This is referred to as the any-to-any principle of interconnection. This requires the interconnection of networks, for example, allowing a cellular customer to communicate not only with existing cellular subscribers but also with the fixed line telephone customers of the incumbent operator and vice-versa. The necessary condition for effective competition is that entrants must not only have access to the incumbent's networks, but access must be on terms and conditions that are fair, non-discriminatory, and transparent

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