PEMRA
Pakistan Electronic Media Regulatory Authority

Market Study on Satellite & Terrestrial TV Licensing and FM Radio Broadcasting

Volume-I

Pakistan Electronic Media Regulatory Authority

Telecom Engineering and Consultancy House (Pvt) Limited
Islamabad

TECH

Volume-I

Acronyms

3G:	Third Generation Technology
4G:	Fourth Generation Technology
AAC Plus:	Advanced Audio Coding Plus
ABC:	Around 1946, Australian Broadcasting Corporation
Ad Spend:	Advertising budget: the amount of money spent on advertising for a product
AJK:	Azad Jammu and Kashmir
AM:	Amplitude Modulation
ATSC:	Advanced Television System Committee
ATV:	A Shalimar Television Network Channel
AVC:	Advanced Video Coding
AX.25:	A data link layer protocol
BBC:	British Broadcasting Company
BCI:	Brain computer interface
CAS:	Conditional Access System
CATV:	Community Antenna Television
C-Band:	3.7–4.2 GHz for downlink, and 5.925–6.425 GHz for uplink
CBS:	Columbia Broadcasting System
CCTA:	Canadian Cable Television Association
CD:	Compact Disc
CDN:	Content Delivery Network
CD-ROM:	Compact Disc- Read Only Memory
CELP:	Code excited linear prediction
CEPT:	The European Conference of Postal and Telecommunications Administrations
CNN:	Cable News Network
COFDM:	***Coded Orthogonal Frequency Division Multiplexing***
CRT:	Cathode Ray Tube
CRTC:	Canadian Radio-television and Telecommunications Commission
DAB:	Digital Audio Broadcasting
D-AMPS:	Digital Advanced Mobile Phone System
DBS:	Direct Broadcasting Satellite
digiTV:	Digital TV
D.I.Khan:	Dera Ismail Khan
DMB:	Digital Multimedia Broadcasting
DRM:	Digital Radio Mondiale
DSBSC:	Double-Sideband Suppressed Carrier
DTH:	Direct-to-Home
DTT:	Digital Terrestrial Television
DTTV:	Digital Terrestrial Television
DTV:	Digital Television
DVB-H:	Digital Video Broadcasting-Handheld
DVB-SH:	*Digital Video Broadcasting - Satellite services to Handhelds*
DVD:	Digital Versatile or Video Disc
E AAC+:	High-Efficiency Advanced Audio Coding
ECM:	Electronic Counter Measure
Edge:	Enhanced Data Rates for GSM Evolution
EHAAT	Effective Height Of Antenna Above Average Terrain
EMI:	Electrical and Musical Industries, Ltd
EMRA:	Electronic Media Regulatory Authority
ERP:	Effective Radiated Power
ETSI:	The European Telecommunications Standards Institute
EU:	European Union

FANA:	Federal Area and Northern Area
FATA:	Federal Area and Tribal Area
FBR:	Federal Board of Revenue
FCC:	Federal Communications Commission
FDI:	Foreign Direct Investment
FM:	Frequency Modulation
FTA:	Free to Air
GDP:	Gross Domestic Product
GHz:	Giga Hertz
GSM:	Global System for Mobile communications
HAAT:	Height Of Antenna Above Average Terrain
HDTV:	High Definition Television
HE-AACv2:	High Efficiency Advanced Audio Coding Version2
HIPERLAN:	High Performance Radio Local Area Network
HMD:	Head Mounted Display
HITS:	Head-end In The Sky
HT:	High Tension
HVXC:	Harmonic Vector Excitation Coding
IBOC:	In-Band On-Channel
ICT	Information Communication Technology
ID:	Identification
iDEN:	Integrated Digital Enhanced Network
IEEE:	***Institute of Electrical and Electronics Engineers***
IMS:	IP Multimedia Subsystem
IPTV:	Internet Protocol Television
IR:	Inflation Rate
IS:	International Standards
ISP:	Internet Service Provider
ISDB-TSB:	Integrated Services Digital Broadcasting
ITU:	International Telecommunication Union
JTRS:	Joint Tactical Radio System
JV:	Joule Volts
KHz:	Kilo Hertz
Ku-Band:	10.7 to 12.75 GHz
KW:	Kilo Watt
LAP:	License Area Plan
LED:	Light Emitting Diode
LCD:	Liquid Crystal Display
LNB:	Low-Noise Block Down Converter
LT:	Low Tension
Mbit/s:	Mega bits per second
MBMS:	Multimedia Broadcast Multicast Service
MediaFLO:	Media Forward Link Only
MHz:	Mega Hertz
MMDS:	Multi-channel Multi-point Distribution System
MobaHo!:	A mobile satellite digital audio/video broadcasting service in Japan
MPEG:	***Moving Picture Experts Group***
MSOs:	Multi System Operators
MW:	Medium Wave
NBC:	National Broadcasting Corporation
NIPS:	National Institute of Population Studies
NOC:	No Objection Certificate
N-PVR:	Network-based Personal Video Recorder
NRSC:	National Radio Systems Committee
NTSC:	National Television System Committee
NWFP:	North Western Frontier Province

OFDM:	Orthogonal Frequency Division Multiplexing
OIRT:	Organisation Internationale de Radiodiffusion et de Télévision
PACTOR:	evolution of both AMTOR (Amateur Teleprinting Over Radio) and packet radio
PAL:	Phase Alternating Line
PBC:	Pakistan Broadcasting Corporation
PC:	Personal Computer
PCM:	Pulse Code Modulation
PEMRA:	Pakistan Electronic Media Regulatory Authority
P2P:	Peer to Peer
POP:	Point Of Presence
PTCL:	Pakistan Telecommunication Company Limited
PTV:	Pakistan Television Corporation Limited
PVC:	***Poly Vinyl Chloride***
QAM:	Quadrature Amplitude Modulation
QoS	Quality of Service
QPSK:	Quadrature phase-shift keying
RAMBO:	Regulatory Authority of Media Broadcasting Organization
RDS:	Radio Data System
RFC:	Request for Comments
RG-6:	Radio Guide- Common Coaxial cable
RTP:	Real Time Transport Protocol
RTSP:	Real Time Streaming Protocol
Satmodems:	Satellite Modem
SCA:	Sub-Carrier
S-DMB :	hybrid version of Digital Multimedia Broadcasting
SDTV:	standard-definition TV
SD Video:	Standard video
SECAM;	*Séquentiel couleur à mémoire*, French for "Sequential Color with Memory
SINCGARS:	Single channel ground to air radio system
SMS:	Subscriber Management System
STB:	set-top box
SW:	Short Wave
TDM:	Time Division Multiplexing
TDMA:	Time Division Multiple Access
TEACH:	Telecom Engineering And Consultancy House
TM:	Trade Mark
TETRA:	Terrestrial Trunked Radio
TV:	Television
TVRO:	Television Receive-Only
UHF:	Ultra High Frequency
UK:	United Kingdom
UMTS:	Universal Mobile Telecommunications System
UPC:	Universal Product Code
USA:	United States of America
VHF:	Very High Frequency
VOD:	Video on Demand
VoIP:	Voice over Internet Protocol
VSAT:	Very Small Aperture Terminal
W-CDMA:	Wideband Code Division Multiple Access
WiFi:	Wireless Fidelity
WiMax:	Worldwide Inter-operability for Microwave Access
ZigBee:	**ZigBee** is a specification for a suite of high level communication protocols using small, low-power digital radios based on the IEEE 802.15.4-2006 standard for wireless personal area networks (WPANs), such as wireless headphones connecting with cell phones via short-range radio.

Foreword

The report attempts to provide a comprehensive account of the developments of electronic media in Pakistan. It provides a road map for the future progress of the media. The description starts with an analysis of the developments in the controlled era. It then moves on discuss the evolution of the sector under the liberal regulatory regime. It provides a vivid account of the current status of electronic media and reasons for it becoming a favourite sector in attracting private investment and benefiting from the technological advancements. Different aspects of television, satellite TV broadcasting and FM radio broadcasting and other miscellaneous transmission media have been described at some length. Developments in electronic media have proceeded hand in hand with rapid expansion in the telecommunication sector that has provided the services in the country in support of electronic media. The two components of Information Communication Technology (ICT) have benefited from each other and progress achieved by one has aided the promotion of the other services. In the coming days the synergy between the two sectors is expected to be further intensified as more and more convergence is foreseen to take place in different services, technologies and the gadgets. As the infrastructure and the number of users for telecommunication services expands, coverage of electronic media will increase. The third factor i.e improved business management capacity which has also been built rapidly in the Pakistani market through the courtesy of big investors has also been an important factor in boosting the growth in the electronic media. The introduction of modern marketing techniques has been facilitated by the new liberal environment. Another factor needs to be highlighted is the realization by commercial and industrial sectors of the economy about the potential of electronic media in promoting businesses through an improved and expanded reach of families. Cellular mobile companies, beverage industry, the real estate and the financial sector, which have made rapid strides in the past few years have benefited from extensive use of electronic media and have reaped large gains. Many additional sectors are likely to follow the example of electronic media and other related sectors mentioned above in exploiting the opportunity provided by electronic media. It is thus foreseen that as the overall economy expands electronic media will flourish further and will become an important tool in promoting and strengthening market forces on the demand as well as the supply side. Significant contribution is expected to be made by the electronic media to the growth in Gross Domestic Product of the country.

The report presents the detailed findings of the Household and Business Survey undertaken by TEACH to get a feedback from the viewers and listeners of electronic media. It is hoped that findings about viewer's and listeners' choice, awareness about their demands and perceptions will be of great help to the regulator, planners and members of the industry. Views of the urban and rural inhabitants, preferences of different age groups in case of males and females segment of society regarding the existing programmes and the performance of the TV channels, FM Radio and Cable TV operators are presented at some length.

Suggestions made by different groups are presented for the benefit of suppliers of electronic media services. The report also discusses current policy issues and, regulatory regime. Where necessary, a comparison of the domestic situation with the international practices is provided. The size of industry in terms of its users, its turnover and latent potential to support further investments in the sector has been worked out. Projections of investment, revenues and employment opportunities are provided. It is expected that the report will provide food for thought to scholars and students of e-media and would provoke further research and studies in this field.

In conclusion, it is deemed fruitful to point out some of the constraints faced in obtaining data from different stakeholders. Importance of statistics and their regular updation needs to be given due emphasis.. The industry generally does not maintain accounts statistics. It is also reluctant to share data with analysts. It needs to be noted that no worthwhile study can be conducted without access to reliable data about different operations of electronic media. Lack of access to reliable data is a problem in all sectors. It is recommended that PEMRA should strengthen system of statistics collection through a dedicated cell in the organization. It should set up a computer database in respect of the electronic media industry.

In the end, it is a pleasure to acknowledge the help, guidance and assistance provided to the consultant by various departments in PEMRA. It is important to mention specially the licensing wing. But for their cooperation, the study would have been difficult to complete. In this connection, thanks are due to Mr. Mushtaq Malik, Chairman PEMRA, who gave us generous time. His direction is acknowledged. The consultant is also grateful to Dr. Abdul Jabbar, Executive Member, who was available to guide the Consultant. The cooperation extended by various licensees, operators, working personnel in the electronic media who participated in Focus Group Discussion is acknowledged with thanks.

Executive Summary

Electronic media are defined as that component of media that utilize electronics or electromechanical energy for the end user to access the content. The primary electronic media sources familiar to the general public are better known as video recordings, audio recordings, multimedia presentations, slide presentations, CD-ROM (Compact Disc- Read Only Memory) and Online Content. Most of the new media are in the form of digital media. Any equipment used in the electronic communication process (e.g. television, radio, telephone, desktop computer, game console, handheld device) is also considered as a part of electronic media.

In view of the unprecedented growth in the private electronic media FM stations in Pakistan, the Pakistan Electronic Media Regulatory Authority (PEMRA) has desired to analyze the actual growth of the existing and future market for determining the trends and prospects of satellite TV and FM broadcast distribution services.

For this purpose PEMRA had` selected Telecom Engineering And Consultancy House (TEACH) to conduct a market research study related to Satellite TV and FM broadcast stations. The present study intends to analyze different aspects of existing and future potential for the advertising, projections in advertising revenue, TV viewership and its projections, existing and future investment levels, employment opportunities, trend in the use devices other than the regular TV sets for viewing the Satellite TV channels. Different indicators related to TV sets and demand and analysis of imported and locally manufactured TV sets were also the subject of study.

As the scope of the report was conceived to be comprehensive, the history of Radio and TV services in Pakistan and the process of establishment of PEMRA and description of its functions are also included. A detailed study of technologies in use has been attempted for better understanding of the issues. The study of technologies covers FM Radio, Digital Radio with status in various countries, Terrestrial Television with status in various countries, High Definition Television (HDTV), Cable TV, digitalization of Cable TV networks, Conditional Access system, Head end in the Sky (HITS), Multichannel Multipoint Distribution Service (MMDS), Satellite Television, Direct to Home (DTH), Internet Protocol Television (IPTV), Mobile TV and Teleport.

Present Status of Electronic Media Market in Pakistan includes a study of existing PEMRA FM Radio and cable TV licensing regime. It analyses the status of electronic media service being provided in Pakistan. TV viewership, radio and TV sets/ devices in use, PEMRA revenue and advertising revenue in respect of various services. This provides an essential starting point to determine future prospects of the different services. A number of tables and Figures have been added to visualize different aspects of the existing market.

International indicators, status of electronic media in various countries and international best practices in respect of Cable TV and FM Radio have been studied with a view to compare with licensing regime in Pakistan with the situation primarily in other countries. This enables us to formulate different suggestions to improve the FM Radio and Cable TV licensing. Comparison of international best practices is given in the Table-1.

Table-1
A Comparative View of Best Practices

Item	USA	Canada	Japan	India	Pakistan
Licensing/ Authorization	- Registration of Cable system is required - FCC, 1992 Cable Act, - Franchisee is selected by local and/ or state authorities	- License - CRTC is Authority, - Broadcasting Act 1991 & Cable Television Regulations, 1986.	- Permission for cable TV service - Ministry of Post and Telecom, - Cable Television Broadcast Law.	- Registration with the Head Post Master of Head Post Office in the Area - Ministry of Information and Broadcasting, - Cable Television Networks (Regulation) Act 1995,	- License - PEMRA, Ordinance 2002 & 2007,
Eligibility	Legal and assumed name of the operator and identification or social security number.	Applicant must be a Canadian.	Any person possessing sufficient financial basis and technical capability with reasonable/ feasible plan and broadcasting facilities confirming technical conditions as stipulated.	Indian citizen or Company with more than 51% paid up share capital with Indian citizens.	Pakistani or Company with majority of shares with Pakistani citizens. Registration with SECP.
License Fee	Franchising Authority may Charge a cable operator upto 5% of his annual gross revenue	Using formula AXB/C where A is licensee's fee revenues for the year less exemption, B is aggregate fee revenues of all licenses for the Year less exemptions and C is total regulatory costs	Prescribed handling charges with due consideration of the actual expenses required for the examination of application	Rs. 500/- for Registration/ Annual Renewal	Rs. 10,000/- to 1,750,000/-
Technologies	Facility consisting of a set of closed transmission paths and associated signal generation, reception, and control equipment that is designed to provide cable service to multiple subscribers	Optic Fiber, Analog & Digital Signaling,	Receiving antenna for conducting retransmission and other equipment necessary for the reception of broadcasting	Analog/ Digital, CAS, IPTV	Coaxial/ Fiber Optic Cable, IPTV, Descramblers & Set-top boxes

Standards	Equipment/ cable layout, interruptions, home wiring and other technical requirements/ standards as per Federal Guidelines	Service standards have been developed by Canadian Cable Television Association (CCTA) and administered by the Cable Television Standards Foundation	Technical standards prescribed by Ministry	Programming code and Advertisement code and standards by Bureau of Indian Standards	Signal Leakage, System/ Equipment Layout as per regulations
QoS	24/7 Local toll free or collect call telephone connection for subscriber, Installations, interruptions and billing as per Federal Guidelines	High quality signals and timely repair. Notification of operation hours and business telephone numbers . Prompt reply and billing with specified details	Maintain Cable TV facilities according to technical standards prescribed in the Ordinance. Notification for discontinuation of facilities		Interruption, Maintenance of Record, New Connection, Billing, Change of TV Channel and complaint handling Procedures
Fine on Violation	Appropriate regulatory sanctions, including imposition of a monetary forfeiture and/ or the issuance of a cease and/ or desist order	Broadcasting without License: up to 20000 CAD to individual for each day offence continues & 200,000 CAD to Corporation. Contravention of Regulation or order: Up to 25000CAD to individual and up to 500,000 CAD to Corporation. Summary conviction in for contravention of license condition	Sentence up to one year or fine up to five hundred thousand yen. Various punishments depending on the nature of violation	Seizure and confiscation of equipment, imprisonment up to two years and/or fine up to one thousand rupees for the first offence and for every subsequent offence imprisonment up to five years and fine up to five thousand rupees	Rs.10,000/- or as per section 33 of Ordinance 2002

In order to address the Terms of Reference of the study, the study primarily focuses on primary level data collected through a survey. The sampling frame of this survey consisted of those households who had TV sets in their premises. The selection of sample took into consideration the representation of all the provinces, AJ&K and Northern area covering rural urban population of various Socio Economic Status (SES) of the sampled area.

The sampling experts preferred to select a purposive/convenience sample size representing the rural-urban population of the country. The sample design is a multistage stratified/cluster sample of different categories of TV users representing rural-urban areas of all the four provinces and different regions with a wide spread inclusion of districts. The urban areas especially focused on major urban cities with an appropriate inclusion of smaller towns in other urban areas. The major urban areas comprise of big cities/capitals of the provinces. The other urban areas include small towns/cities. The breakdown of the sample size by different provinces is shown in Table-2.

Table-2
Distribution of Sample Size by Provinces

Area	Percent
Punjab	47
Sindh	29
NWFP	15
Balochistan	5
AJK&FATA	4
Total	100

It needs to be noted that the urban areas were over sampled in relation to the rural distribution of population because the urban population is usually more heterogeneous relative to the rural population which is considered to be more homogeneous.

A questionnaire consisting of 43 questions related to TV and FM radio was designed to address the ToR of the Study. Comments on the questionnaire were invited from PEMRA. Discussions and meetings were also held with other stakeholders to improve the questionnaire.

The enumerators were selected from a group who had Master's degree in Economics, Statistics and Social Sciences. A training workshop was held for the enumerators and supervisors. Each question was explained to the participants to avoid confusion in the interpretation of different questions. The pretesting of the questionnaire was carried out. In the light of this pretesting, the questionnaire was finalized.

A team of 33 enumerators and supervisors conducted the Survey in all the sampled areas covering 46 districts of all the provinces, AJ&K and FATA.

The data entry was done by the qualified data entry operators. Necessary editing was also carried out while entering the data for tabulation. The SPSS software was used for the tabulation of data.

Survey findings indicate that 81% of households have TV in their houses. Some of the households also had more than one television set. The position of use of TV has also been examined by age groups and by gender. It is found that 81% of the population feels that TV viewership focuses on local problems/ issues. It is worth mentioning that most of the TV viewers use imported TV sets. About 57% of viewers like to watch programs in their regional language. Furthermore, most of the people in all age groups take interest in news and current affairs irrespective of the fact whether they are males or females. However, females seem more interested in news and current affairs as more than 91% of females like to view news/ current affairs programs whereas this ratio is about 85% in case of male members. Ranking of and preferences in case of other programs is general knowledge, entertainment, sports, religion, cooking, education, travel and

business respectively. Most of the viewers like Urdu programs whereas only 7% of viewers like to watch English Programs.

Various Figures have been added in the report to understand the likings and habits of the viewers in different age groups keeping in view the gender difference. Viewers have generally demanded addition of channels to provide News/ current affairs, drama, movies, music, sports and religious programs.

On the basis of existing data, forecasts have been made for 2015 which provides information about the number of channels, expected advertising revenue, investment, viewership and employment generation.

In the last chapter, recommendations have been made to improve the licensing regime in Pakistan under the PEMRA law.

Contents

	Title	Page
	Acronyms	iii
	Foreword	vi
	Executive Summary	viii
	Contents	xiii
Chapter-1	**Introduction**	**1**
Chapter-2	**History of Developments**	**3**
2.1	Electronic Media	3
2.2	Broadcasting Around the World	4
2.3	Progress of Broadcasting in Pakistan	6
2.4	Pakistan Television Corporation Limited	7
2.5	STN (Shalimar Television Network) ATV	8
2.6	EMRA	9
2.7	Pakistan Electronic Media Regulatory Authority (PEMRA)	9
Chapter-3	**Review of Technologies**	**11**
3.1	FM Broadcasting	11
3.2	Digital Radio	13
3.3	Terrestrial Television	18
3.4	High Definition Television (HDTV)	20
3.5	Cable TV	23
3.6	Multi-channel Multi point Distribution System (MMDS)	24
3.7	Satellite Television	25
3.8	Direct to Home	27
3.9	Internet Protocol Television (IPTV)	29
3.10	Mobile TV	33
3.11	Teleport	35
Chapter-4	**Present Status of Electronic Media/Existing Market in Pakistan**	**36**
4.1	Cable TV	36
4.2	Satellite Television	41
4.3	Multi-channel Multi point Distribution System (MMDS)	42
4.4	Television Channels	42
4.5	Direct to Home (DTH)	45
4.6	Internet Protocol TV (IPTV) Channel Distribution Services	45
4.7	Mobile TV	46
4.8	TV Sets	46
4.9	FM Radio Broadcasting	49
4.10	Broadcast Coverage	55
4.11	Household with Radio/TV Sets and Personal Computer	55

4.12	(PEMRA) Revenue	56
4.13	Advertisement Revenue Generated by Electronic Media	60
4.14	Electronic Media Core indicators at a Glance	63
Chapter-5	**International Scenario**	**64**
5.1	Indicators	64
5.2	Direct to Home (DTH)	70
5.3	Mobile TV	70
5.4	Internet Protocol Television (IPTV)	71
Chapter-6	**International Best Practices**	**75**
6.1	Cable TV Licensing	75
6.2	FM Radio Licensing	86
Chapter-7	**Electronic Media Market and Prospects**	**91**
7.1	Introduction	91
7.2	Components of Advertisement Spend	94
7.3	Methodology for Projection of Number of Satellite TV Channels and FM Radio stations	97
7.4	Cable TV Growth	102
7.5	Cable TV Projections	103
7.6	DTH Subscriber Projections	104
7.7	Investment Projections	105
7.8	Electronic Media Revenues	106
7.9	Landing Right TV Channels	110
7.10	TV Sets and Viewership Forecast	112
7.11	Radio and Listenership Forecast	114
7.12	Employment	115
7.13	Employment Projections	118
7.14	Indicators and regional comparison	120
Chapter-8	**Conclusions and Recommendations**	**122**
8.1	Conclusions	122
8.2	Recommendations	124

List of Tables

Chapter-1	**Introduction**	**Page**
Chapter-2	**History of Developments**	
Chapter-3	**Review of Technologies**	
3.1	Bandwidth and Channels	23
Chapter-4	**Present Status of Electronic Media/Existing Market in Pakistan**	
4.1	Signal Leakage	37
4.2	Specifications for Buried Cable	37
4.3	Clearance for Overhead Cable	38
4.4	Clearance Between the Lines	38
4.5	Satellite Television Licenses and Pending Applications	42
4.6	Table	43
4.7	Table	44
4.8	Table	44
4.9	PTV Boosters	45
4.10	TV Sets in Pakistan in Millions	46
4.11	Table	46
4.12	Table	55
4.13	Cable TV Revenue (Rupees in Millions)	56
4.14	FM Radio Revenue (Rupees in Millions)	56
4.15	MMDS Revenue (Rupees in Millions)	57
4.16	STV revenue (Rupees in Millions)	57
4.17	Landing Right revenue (Rupees in Millions)	57
4.18	Other Revenues (Rupees in Millions)	58
4.19	Gross Revenue (Rupees in Millions)	58
4.20	PEMRA Revenue 2008 by type of Service (Rupee Million)	59
4.21	TV advertisement Revenue (Rupees in Billions)	60
4.22	Radio advertisement Revenue (Rupees in Billions)	61
4.23	Breakup of advertisement Revenue (2007-08)	62
4.24	Year wise Ad Spend Revenue, Pakistanl, 2009	62
4.25	TV and Radio Share in Media Revenue, Pakistan, 2009	63
4.26	Electronic Media Core Indicators	63
Chapter-5	**International Scenario**	
5.1	TV Sets per 100 inhabitants	64
5.2	TV Households as percentage of total Households	65
5.3	Cable TV Subscribers per 1000 Population	66
5.4	Radio Sets per 100 inhabitants	67
5.5	Computers per 100 inhabitants	68
5.6	Internet users per 100 inhabitants	68

5.7	Markets as % of GDP, 2007	69

Chapter-6 International Best Practices

6.1	Best Practices Comparison	84
6.2	FM Station Classes as defined by FCC	86
6.3	FM Classes	87
6.4	Minimum Domestic Separation distances in Kilometers	87

Chapter-7 Electronic Media Market and Prospects

7.1	Ad Spend ~ GDP Ratio Pakistan	92
7.2	Ad Spend Index and Stock Exchange Index	92
7.3	Growth of GDP, TV Ad Spend and Number of TV channels	93
7.4	Growth of GDP Radio Ad Spend and number of FM Radio Stations	93
7.5	Media Components	95
7.6	Categories and sustenance cost of satellite TV channels	98
7.7	Projections of TV Ad Spend and number of TV channels	98
7.8	Projections of TV Ad Spend and number of TV channels	99
7.9	Projections of TV Ad Spend and number of TV channels	99
7.10	Categories and sustenance cost of FM Radio Stations	100
7.11	GDP, Radio Ad Spend and number of FM Radio Stations	100
7.12	Radio Ad Spend and number of FM Radio Stations	101
7.13	Radio Ad Spend and number of FM Radio Stations	101
7.14	Radio Ad Spend and number of FM Radio Stations	101
7.15	Category and number of Cable TV Licenses by Province	102
7.16	Overall projections of CTV subscribers including broadband	104
7.17	Projections of MMDS subscribers	104
7.18	Projections of DTH subscribers	104
7.19	Projections of Satellite TV channels	105
7.20	Projections of FM Radio Stations	105
7.21	Electronic Media yearly investment projection	106
7.22	Projections of TV Revenue	107
7.23	Projections of FM Radio stations Revenue	107
7.24	Number of CTV subscribers and revenue projections	108
7.25	Number of broadband connections and revenue projections	108
7.26	Number of MMDS subscribers and revenue projections	108
7.27	Projections of DTH subscribers and investment	109
7.28	Electronic Media revenue projections	110
7.29	Landing Rights channels subscription revenue projections	111
7.30	Population projections and number of TV Sets	112
7.31	TV viewership projections	113
7.32	Radio listenership projections	114
7.33	Direct Employment projections	118

7.34 Indirect Employment projections 119
7.35 Induced Employment projections 120
7.36 Total Electronic Media Employment projections 120
7.37 Total Electronic Media Industry Revenue 121
7.38 Regional comparison 121
Chapter-8 Conclusions and Recommendations

List of Figures

Chapter-1	**Introduction**	**Page**
Chapter-2	**History of Developments**	
Chapter-3	**Review of Technologies**	
3.1	Audio Processing	13
Chapter-4	**Present Status of Electronic Media/Existing Market in Pakistan**	
4.1	Cable TV Licenses 2002-03 to 2008-09	40
4.2	Cable TV Licenses (2008-09) by Province	40
4.3	Cable TV Subscribers (Million)	41
4.4	Cable TV Subscribers (Million) in Pakistan (2006-07) by Provinces	41
4.5	Licenses issued/ Pending applications	42
4.6	TV Channel Licensees Private and Channels being Operated	43
4.7	Province wise TV Channels	43
4.8	Region wise Position of Satellite TV Licensees and Channels	44
4.9	TV Sets in Pakistan in Millions	46
4.10	Province wise TV Sets	46
4.11	Radio Penetration (Percentage Households)	50
4.12	Private FM Radio Licensees/ Radio Stations on Air	53
4.13	Private FM Licensees by Province 2008	53
4.14	Private Operational FM Radio Stations by Province (2008)	54
4.15	Radio/ TV/ Satellite Coverage (2007-08)	55
4.16	Percentage of Households with Radio, TV and Personal Computers 2006-07	55
4.17	Cable TV Revenue	56
4.18	FM Radio Revenue	56
4.19	MMDS Revenue	57
4.20	Satellite TV Revenue	57
4.21	Landing Rights Revenue	58
4.22	Revenue from Other Services	58
4.23	PEMRA Total Revenue from Operations	59
4.24	PEMRA Revenues 2005-06 by type of Service in Percent	59
4.25	Advertisement Revenue in Pakistan (Billion Rs)	60
4.26	TV Advertisement Revenue	61
4.27	Radio Advertisement Revenue	61
4.28	Year wise Ad Spend Revenue	62
4.29	Breakup of Advertisement Revenue (2006-07)	63
Chapter-5	**International Scenario**	
5.1	TV Sets per 100 inhabitants (2003)	64
5.2	Percent Households with Television Country wise	65
5.3	Cable TV Subscribers per 1000 Population	66
5.4	Percentage of Households with Radio Sets in Selected South	67

Asian Countries (2002-03)
5.5 Radio Sets per 100 inhabitants 67
5.6 Computers per 100 inhabitants 68
5.7 Internet Users per 100 inhabitants 69
5.8 World and Asia Pacific Market 2007 69
5.9 Global Digital Devices Market Forecast 70
5.10 World Wide IPTV Subscribers 71
5.11 VDSL Options 73
5.12 Costs of Home Networking 72
5.13 2006 Global IPTV Subscriber (3.6m), Global IPTV Services Revenue (1 BN) 73
5.14 Global VOD Traffic Growth 74

Chapter-6 International Best Practices

Chapter-7 Electronic Media Market and Prospects
7.1 Ad Spend ~ GDP ratio 92
7.2 Ad Spend Index and Stock Exchange Index 92
7.3 Growth of GDP, TV Ad Spend and number of TV channels 93
7.4 Growth of GDP, Radio Ad Spend and number of Radio Stations 93
7.5 Media components in the Ad Spend 95
7.6 Projected media components in the Ad Spend 95
7.7 Projections of Ad Spend 96
7.8 Growth of number of CTV Licenses 102
7.9 Growth of number of CTV subscribers 102

Chapter-8 Conclusions and Recommendations

List of Maps **Page**

4.1 Location of Government Radio Stations (2008) 52
4.2 Location of Government Radio Stations (2007-08) 53
4.3 Location of Private FM Radio Stations (2006-07) 55

List of Boxes **Page**

Box-4.1 TV Manufacturers 48
Box-4.2 Retail Sellers 48
Box-4.3 TV Devices 49
Box-7.1 Cable TV 103
Box-7.2 Rural Urban variation 113
Box-7.3 Gender Tilt 115

Chapter 1

Introduction

Electronic media[1] are media that utilize electronics or electromechanical energy for the end user to access the content. This is in contrast to static media (mainly print media), which are most often created electronically, but don't require electronics to be accessed by the end user in the printed form. The primary electronic media sources familiar to the general public are better known as video recordings, audio recordings, multimedia presentations, slide presentations, CD-ROM (Compact Disc- Read Only Memory) and Online Content. Most of the new media are in the form of digital media. However, electronic media may be in either analog or digital format. Any equipment used in the electronic communication process (e.g. television, radio, telephone, desktop computer, game console, handheld device) is considered electronic media.

Electronic media is used almost everywhere in the world. If transmission is not possible through wire/ cable, accessibility is provided through wireless media. Satellite receivers are used in the most remote and inaccessible areas. Electronic media devices have found their way into all parts of modern life. The Primary uses of electronic media are Journalism (News), Marketing (Advertising and Graphic Design), Education (Professional Training), Science, Engineering, Fine Art (Video, Digital photography, Digital Art, Interactive Art and Experimental music), Commerce (Industry, Corporate Communications, Business Presentations and Telecommuting), Software Interfaces, Computer Simulations, Virtual Reality, Entertainment (Television, Video Games, Movies and Music), Government (Infrastructure for Communications, Transportation and Public Services and Military requirements) and Nonprofit Services

Pakistan Electronic Media Regulatory Authority (PEMRA) intended to analyze the actual growth of the existing and future market for determining the trends and prospects of satellite TV and FM broadcast distribution services in view of the unprecedented growth in the private electronic media in stations in Pakistan. This would help PEMRA to formulate necessary policy and other measures in terms of licensing for sustainable impact of electronic media in the country.

For this purpose PEMRA selected Telecom Engineering And Consultancy House (TEACH) to conduct market research study related to Satellite TV, FM broadcast stations. The study intends to analyze existing and future potential for the advertising, projection in advertising revenue, TV viewership and its projections, existing and future investment levels, employment opportunities, trend to use devices other than the regular TV sets for viewing the Satellite TV channels. Broad indicators related to TV sets and demand and analysis of imported versus locally manufactured TV sets.

[1] Wikipedia

To make the report comprehensive, history of Radio and TV services in Pakistan and establishment of PEMRA and its functions will be narrated briefly. Present Status of Electronic Media Market in Pakistan will also be looked into which will cover study of existing PEMRA FM Radio and cable TV licensing regime, Satellite and Terrestrial TV, TV channels categories, TV viewership, radio and TV sets/ devices in use, various type of media revenues etc.

Keeping in view the present situation, reports of survey carried out by TEACH will be analyzed and comments will be made in the light of international scenario. The project will also analyze the contents of the current TV programs and their future demand in regional languages/channels along with market demand in terms of mixed versus specialized channels. The study also intends to look into best practices of cable TV technology/ licensing in some other developed and developing countries to compare the same with the existing PEMRA cable TV licensing regime and to recommend new CTV licensing in line with regional and international practices under the PEMRA law.

Chapter 2

History of Developments

2.1 Electronic Media

Electronic media is not a recent development. Its components[2] have taken years to develop. The same are briefly mentioned hereunder:

(i) Transmission

(a) *Wire*

- Telegraph 1795-1832
- Facsimile 1843-1861
- Telephone 1849-1877
- Coaxial Cable 1962
- Fiber Optics 1956-1970

(b) *Wireless*

- Radio 1897-1920
- Satellite 1958-1972
- Free Space Optics 1960s

(c) *Internet*

- Download (RFC Protocol) 1969
- Live Streaming (RTP Protocol)1996

(ii) Display and Output

(a) Information Processing 1940's (Term)
(b) Galvanometer 1832
(c) Telegraph Sounder 1844
(d) Telephone Receiver 1849-1877
(e) Light Bulb 1801-1883
(f) Neon 1893-1902
(g) Teletype Receiver 1910
(h) CRT 1922
(i) Radio/Television Tuner 1894-1927
(j) Speaker/Headphones 1876-1928/1930s
(k) Light Emitting Diode (LED)/
Liquid Crystal Display (LCD 1955-1962/1968
(l) Laser Light Show 1970s
(m)Personal Computer Monitor 1950s/1976
(n) Large Electronic Display 1985
(o) HDTV 1936 (Term) 1990s (Standards)
(p) HMD 1968-current
(q) Mobile Phone Handset

[2] Wikipedia

(iii) Signal Processing

(a)	Capture (Capacitor)	1745
(b)	Analog Encoding (Morse Code)	1830's
(c)	Electronic Modulating	1832-1927
(d)	Electronic Multiplexing (TDM)	1853
(e)	Digitizing (PCM Telephone)	1903
(f)	Electronic Encryption	1935-1945
(g)	Online Routing	1969
(h)	Electronic Programming	1943-current

(iv) Electronic Information Storage

(v) Recording Medium

- Punch Card and Paper Tape 1725/1846
- Phonograph Cylinder and Disk 1857-1958
- Film 1876-1889
- Magnetic Storage 1898-2003
- RAM 1941-current
- Barcodes (UPC) 1952/1973
- Laser Disc 1969-1978
- Compact Disc/DVD 1982/1993-current

(vi) Content Formats

- Content in general 1877-current
- Audio Recording 1877-current
- Video Recording 1952-current
- Digital File Formats
- Database Content and Formats 1963-current

(vii) Interactivity

- Control Panel
- Input Device
- Game Controller
- Handheld
- Wired Glove
- Brain computer interface (BCI)

2.2 Broadcasting around the World

(i) United States

Describing exactly when broadcasting first began is difficult. Very early radio transmissions only carried the dots and dashes of wireless telegraphy. One of the first signals of significant power that carried voice and music was accomplished in 1906 by Reginald Fessenden when he made a Christmas Eve

broadcast to ships at sea from Massachusetts. He played "O Holy Night" on his violin and read passages from the Bible.

Charles Herrold of San Jose, California sent out broadcasts as early as April 1909 from his Herrold School electronics institute in downtown San Jose, using the identification *San Jose Calling*, and then a variety of different call signs as the Department of Commerce began to regulate radio. By 1912, the United States government began requiring radio operators to obtain licenses to send out signals.

The National Broadcasting Company began regular broadcasting in 1926, with telephone links between New York and other Eastern cities. NBC became the dominant radio network.

Around 1946, Australian Broadcasting Corporation (ABC), National Broadcasting Corporation (NBC), and Columbia Broadcasting System (CBS) began regular television broadcasts. Television began to replace radio as the chief source of revenue for broadcasting networks during the period from 1950 to 1960.

In the 1950s, American television networks introduced broadcasts in color. (The Federal Communications Commission approved the world's first monochrome-compatible color television standard in Dec., 1953.

The 2000s saw the introduction of digital radio and direct broadcasting by satellite (DBS) in the USA. Digital radio services were allocated a frequency band in the range 2,300 MHz for satellite broadcasting.

Cable television in the United States is a common form of television delivery, generally by subscription. TV channel distribution in the shape of cable television was introduced in the United States in 1948, with subscription services in 1949. Data by SNL Kagan shows that as of 2006 about 58.4% of all American homes subscribe to basic cable television services.

(ii) Britain

The first experimental broadcasts, from Marconi's factory in Chelmsford, began in 1920. Two years later, a consortium of radio manufacturers formed the British Broadcasting Company (BBC). This broadcast continued till its license expired at the end of 1926. The company later became the British Broadcasting Corporation, a non-commercial organization.

BBC television broadcasts in Britain began on November 2, 1936, and continued until wartime conditions closed the service in 1939. BBC television resumed transmission on June 7, 1946, and commercial television broadcast began on September 22, 1955. Both used the pre-world war 405-line standard. BBC2 came on the air on April 20, 1964, using the 625-line standard, and began PAL color transmissions on July 1, 1967, the first in Europe.

(ii) Germany

Before the Nazi assumption of power in 1933, German radio broadcasting was supervised by the Post Office. A listening fee of 2 Reichsmark per receiver paid most subsidies. Germany experimented with television broadcasting before the Second World War, using a 180-line raster system beginning before 1935.

(iii) Sri Lanka

Sri Lanka has the world's second oldest radio station in Asia. The station was known as Radio Ceylon. It is now known as the Sri Lanka Broadcasting Corporation.

Sri Lanka created broadcasting history in Asia when broadcasting was started in Ceylon by the Telegraph Department in 1923 on an experimental footing, just three years after the inauguration of broadcasting in Europe. Sri Lanka occupies an important place in the history of broadcasting with broadcasting services inaugurated just three years after the launch of the BBC in the United Kingdom.

2.3 Progress of Broadcasting in Pakistan[3]

(i) Aug 14,1947: Pakistan came into being and the announcement of its creation was made by the new organization, the Pakistan Broadcasting Service which was later designated as Radio Pakistan;

(ii) 1948: Rawalpindi-3 Radio Station with 500 Watt Short Wave (SW) transmitter and Karachi Radio Station with 100 Watt SW transmitter were inaugurated;

(iii) 1949:100-Watt Medium Wave (MW) Rawalpindi transmitter was inaugurated;

(iv) 1950: Inauguration of a new broadcasting house at Karachi;

(v) 1951: Foundation-stone of Hyderabad radio station with 1 kilowatt Medium Wave (MW) transmitter was laid;

(vi) 17 Oct 1956: Quetta radio station and 1 kW MW transmitter was inaugurated;

(vii) 15 Oct. 1960: Inauguration of Rawalpindi-2 radio station with 1 kW SW transmitter;

(viii) 1970: Multan radio station with 120 kW MW transmitter inaugurated;

(ix) 21 April 1973: World Service for overseas Pakistanis inaugurated;

(x) December 1972: Government decided to convert Radio Pakistan into Pakistan Broadcasting Corporation;

(xi) 1974: Foundation-stone of 100 kW Transmitter, Khairpur laid;

(xii) 18 Aug 1975: Inauguration of Bahawalpur radio station with 10 kW MW;

(xiii) 1977: The main broadcasting unit, the Islamabad Radio station in the new National Broadcasting house with 1,000 kW MW transmitter was inaugurated;

(xiv) 1977: Inauguration of Gilgit radio station with 250 Watt MW transmitter and Skardu radio station with 250 watt MW transmitter;

[3] Pakistan Broadcasting Corporation (PBC) Website

(xv) 1981: Turbat radio station with 250 Watt MW and D.I.Khan radio station with 10 kW MW transmitter and Khuzdar radio station with 250 Watt MW inaugurated;
(xvi) 15 Sept. 1982: Faisalabad radio station with 250 Watt MW came on air;
(xvii) 7 May 1986: A new broadcasting house, Khairpur was inaugurated;
(xviii) 1989: Inauguration of Sibi relay station with 250 Watt transmitter and Abbottabad relay station with 250 Watt transmitter;
(xix) Aug 1993: Chitral radio station with 1 kW FM transmitter was inaugurated;
(xx) 1994: First Private FM Broadcasting Station were established under license from Ministry of Information and Broadcasting;
(xxi) 1996: Foundation stone of Loralai station and 10 kW MW transmitter and 10 kW MW transmitter at Zhob were laid;
(xxii) 1997: The computerization of the PBC news processing system and availability of the news bulletins on the Internet in text and audio form was inaugurated:
(xxiii) October 1998: Radio Pakistan started FM transmission;
(xxiv) 2002: FM101 Station at PBC Islamabad was inaugurated;
(xxv) 2005: New FM regular stations set up at Gawadar, Mianwali, Sargodha, Kohat, Bannu and Mithi.

Radio Pakistan broadcasts programs in the following local and foreign languages:

(i) **Local:** Urdu, Hindco, Saraiki, Pushto, Punjabi, Sindhi, Balochi,Kashmiri, Dari, Chitrali, Wakhi, Broshiski, Balti, Brahvi, Pothohari, Gojri, Kohistani and Pahari, Shina,Hazarji;

(ii) **Foreign:** English, Dari, Irani, Turkish, Turki, Hazargi, Arabic, Hindi, Tamil, Bangla, Gujrati, Chinese, Sinhali,Nepali, Russian, Asami

2.4 Pakistan Television Corporation Limited[4]

Television Broadcasting started in Pakistan on 26 November 1964 with a small pilot TV Station established at Lahore. Initially, it started providing its Black & White services with a staff of 30 employees only. After completion of experimental phase, a private limited company named Television Promoters Limited was set up in 1965 which was converted into a public limited company in 1967 and renamed as Pakistan Television Corporation Limited (PTV). Television centers were established in Karachi and Rawalpindi/ Islamabad as well in 1967.

First satellite earth station with TV relay facilities was inaugurated at Dehmandro, Karachi in 1973 by the Prime Minister of Pakistan enabling Pakistan TV to transmit and receive live color TV broadcasts from abroad. In 1974, a TV

[4] Pakistan Television (PTV) Corporation Website

channel was added on the national Microwave network connecting Karachi, Lahore and Rawalpindi on national television hookup.

Later on, Television centers were established in Peshawar and Quetta in 1974. On February 18, 1982 main color TV centre was inaugurated at 58 Shahrah-e-Quaid-e-Azam, Karachi with two production studios. Now PTV staff consists of more than 6000 persons at all Units of the Corporation.

PTV started air time sale in 1987 and thus private parties could broadcast the programs on PTV. PTV has also introduced Audio-Text and Tele-text services in the region. The live cricket, hockey quizzes and the PTV Awards are few examples of mass public participation through Audio text whereas availability of on-line Flight Information, live surge and fall of stock exchanges, news updates etc. on normal home TV sets are few references of Teletext application.

Due to tough international competition, a new satellite channel “PTV News” is providing updated news for 24 hours. A channel “PTV National” is providing different local news as well as entertainment in local languages spoken in different parts of the country whereas “PTV Global” is providing entertainment and the latest news to Pakistanis working abroad.

PTV Home provides coverage to 89% population whereas PTV news provides service to 78% population. Further, 35 rebroadcast stations/ boosters for PTV1 and 16 rebroadcast stations/ boosters for PTV2 have been established in the country.

2.5 STN (Shalimar Television Network)/ATV

Shalimar Recording & Broadcasting Company Ltd. (SRBC) incorporated in 1974 was originally perceived and formed as a recording company in 1974. The company commenced its commercial business on 1st July 1976 with the release of Holy Quran on audio cassettes and gramophone records.

In 1989 it created a wholly owned Peoples Television Network (Pvt.) Limited which was later amalgamated with SRBC with the new name of STN, now called ATV (A Shalimar Television Network Channel).

The Channel which had its only transmitting station at Islamabad in 1990 now operates with 20 stations covering all major cities and commercial centres of Pakistan. The ATV stations are located at Islamabad, Karachi, Lahore, Faisalabad, Daska, Multan, Bahawalpur, Larkana, Hyderabad ,Sukkur, Peshawar, Mangora, Qalat, Batkhail, Khuzdar, Thandyani, Sahiwal, Sibi, Quetta and Tando Allahyar covering over 50% of the population. The ATV is offering family entertainment programs. The program mix is Entertainment 40%, Information 37 % and Education 23%. All the capital and running expenses of this company are met from its own resources.

2.6 EMRA

In early 1997, the caretaker government of Malik Meraj Khalid promulgated the Electronic Media Regulatory Authority (EMRA) Ordinance 1997 which acknowledged two fundamental principles i.e. (a) the airwaves of the country are a national, public asset and not a government monopoly and (b) any interested, eligible citizen or organization has equal right to operate its own radio and TV channels just as citizens have a right to publish and edit their own newspapers and magazines.

The Ordinance No.XXXV of 1997 was to regulate electronic media in Pakistan, read: "Whereas it is necessary to provide for the development of electronic media in order to improve the standards of information, education and entertainment and to enlarge the choice available to the people of Pakistan in the media for news, current affairs, religious knowledge, art, culture, science, technology, economic development, social sector concerns, music, sports, drama and other subjects of public and national interest". The Ordinance, however, lapsed as new elected government did not enact it into a law.

When General Pervaiz Musharraf took over, Mr. Javed Jabbar a media professional was appointed as Advisor and incharge of Ministry of Information and Broadcasting. His team revived the EMRA law under the name of Regulatory Authority of Media Broadcasting Organization (RAMBO) and finally it was implemented in 2002 as Pakistan Electronic Media Regulatory Authority (PEMRA) Ordinance No XIII of 2002 after Mr. Javed Jabbar left the cabinet. In 2007 new amendments were made in the said ordinance through an Ordinance No.LXV 2007

2.7 Pakistan Electronic Media Regulatory Authority (PEMRA)

Pakistan Electronic Media Regulatory Authority (PEMRA)[5] is the regulating body for the electronic media in Pakistan. It was established in the year 2002. Its role is to facilitate private electronic media and to regulate all related issues which include matters like licensing FM Radio, conventional TV broadcasting, Cable TV, IPTV, Direct-to-Home (DTH) and Multi-channel Multi-point Distribution System (MMDS).

2.7.1 Functions of the Authority

(i) The Authority is responsible for regulating the establishment and operation of all broadcast media and distribution services in Pakistan established for the purpose of international, national, provincial, district, local or special target audiences;

(ii) The Authority regulates the distribution of foreign and local TV and radio channels in Pakistan;

[5] Pakistan Electronic Media Regulatory Authority (PEMRA) Website

(iii) The Authority may, by notification in the official Gazette, make regulations and also issue determinations for carrying out the purposes of the Ordinance.

2.7.2 PEMRA's Mandate

PEMRA is responsible to:

(i) Improve the standards of information, education and entertainment;

(ii) Enlarge the choice available to the people of Pakistan in the media for news, current affairs, religious knowledge, art, culture, science, technology, economic development, social sector concerns, music, sports, drama and other subjects of public and national interest;

(iii) Facilitate the devolution of responsibility and power to the grass roots by improving the access of the people to mass media at the local and community level;

(iv) Ensure accountability, transparency and good governance by optimization the free flow of information.

Chapter 3

Review of Technologies

3.1 FM Broadcasting

FM broadcasting is a broadcast technology invented by Edwin Howard Armstrong that uses frequency modulation (FM) to provide high-fidelity sound over broadcast radio.

(i) Broadcast bands

Throughout the world, the broadcast band falls within the VHF part of the radio spectrum. Usually 87.5 - 108.0 MHz is used, or some portion thereof, with few exceptions:

- In the former Soviet republics, and some Eastern Bloc nations, an older band from 65-74 MHz is also used. Assigned frequencies are at intervals of 30 kHz. This band, sometimes referred to as the OIRT band, is slowly being phased out in many countries.

- In Japan, the band 76 - 90 MHz is used.

The frequency of an FM broadcast station is usually an exact multiple of 100 kHz. In most of the Americas and the Caribbean, only odd multiples are used. In some parts of Europe, Greenland and Africa, only even multiples are used. In Italy, multiples of 50 kHz are used.

(ii) Pre-emphasis and de-emphasis

Random noise has a 'triangular' spectral distribution in an FM system, with the effect that noise occurs predominantly at the highest frequencies within the baseband. This can be offset, to a limited extent, by boosting the high frequencies before transmission and reducing them by a corresponding amount in the receiver. Reducing the high frequencies in the receiver also reduces the high-frequency noise. These processes of boosting and then reducing certain frequencies are known as pre-emphasis and de-emphasis, respectively.

The amount of pre-emphasis and de-emphasis used is defined by the time constant of a simple RC filter circuit. In most of the world a 50 µs time constant is used. In North America, 75 µs is used. This applies to both mono and stereo transmissions and to baseband audio (not the subcarriers).

The amount of pre-emphasis that can be applied is limited by the fact that many forms of contemporary music contain more high-frequency energy than the musical styles which prevailed at the birth of FM broadcasting. They cannot be pre-emphasized as much because it would cause excessive deviation of the FM carrier.

(iii) FM stereo

In the late 1950s, several systems to add stereo to FM radio were considered by the FCC. Included were systems from 14 proponents including Crosley, Halstead, Electrical and Musical Industries, Ltd (EMI), Zenith Electronics Corporation and General Electric. The General Electric and Zenith systems were formally approved by the FCC in April 1961 as the standard stereo FM broadcasting method in the USA and later adopted by most other countries.

It is important that stereo broadcasts should be compatible with mono receivers. For this reason, the left (L) and right (R) channels are algebraically encoded into sum (L+R) and difference (L−R) signals. A mono receiver will use just the L+R signal so the listener will hear both channels in the single loudspeaker. A stereo receiver will add the L+R and L−R signals to recover the Left channel, and subtract the L+R and L−R signals to recover the Right channel. The (L+R) Main channel signal is transmitted as baseband audio in the range of 30 Hz to 15 kHz. The (L−R) Sub-channel signal is modulated onto a 38 kHz double-sideband suppressed carrier (DSBSC) signal occupying the baseband range of 23 to 53 kHz. A 19 kHz pilot tone, at exactly half the 38 kHz sub-carrier frequency and with a precisely defined phase relationship to it, is also generated. This is transmitted at 8–10% of overall modulation level and used by the receiver to regenerate the 38 kHz sub-carrier with the correct phase.

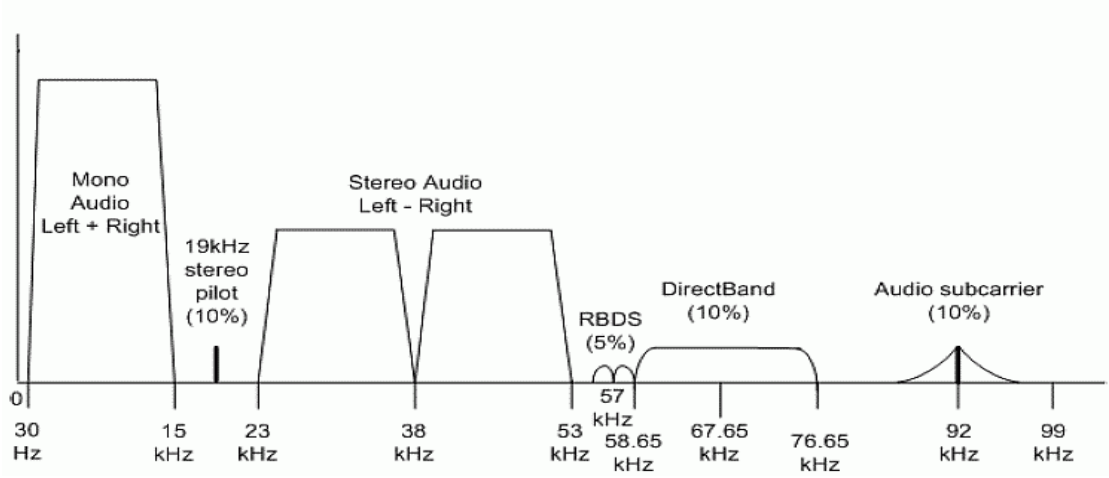
The final multiplex signal from the stereo generator contains the Main Channel (L+R), the pilot tone, and the sub-channel (L−R). This composite signal, along with any other sub-carriers (SCA), modulates the FM transmitter.

Converting the multiplex signal back into left and right audio signals is performed by a stereo decoder, which is built into stereo receivers. In order to preserve stereo separation and signal-to-noise parameters, it is normal practice to apply pre-emphasis to the left and right channels before encoding, and to apply de-emphasis at the receiver after decoding.

(iv) Audio processing

Based on peak-to-average ratios, human voice has lower loudness than music. This is due to the asymmetry of the sound waves produced by vocal cords. Audio processing can improve voice loudness levels relative to music levels as broadcast. The FM broadcast transmission system needs a stage of audio processing in order to get good coverage and audio quality. The audio processing improves the sensation of “sound quality”.

Figure 3.1
Audio Processing



(v) Distance covered by an FM stereo transmission

The range of an FM mono transmission is related to the transmitter RF power, the antenna gain and antenna height. The FCC (USA) publishes curves that aid in calculation of this maximum distance as a function of signal strength at the receiving location.

For FM stereo, the maximum distance covered is significantly reduced. This is due to the presence of the 38 kHz subcarrier modulation. Vigorous audio processing improves the coverage area of an FM stereo station.

Most countries expanded their use of FM through the 1990s. Because it takes a large number of FM transmitting stations to cover a geographically large country, particularly where there are terrain difficulties, FM is more suited to local broadcasting than national networks. In such countries, particularly where there are economic or infrastructural problems, "rolling out" a national FM broadcast network to reach the majority of the population can be a slow and expensive process.

3.2 Digital Radio

Digital radio describes radio technologies which carry information as a digital signal, by means of a digital modulation method. The most common meaning is *digital audio broadcasting* technologies, but it also covers TV broadcasting as well as many two-way digital wireless communication technologies. The acronym DAB (Digital Audio Broadcasting) is synonymous with the Eureka 147 standard.

(i) One-way digital radio standards

One-way standards are those used for broadcasting, as opposed to those used for two-way communication. While digital broadcasting offers many potential benefits, its introduction has been hindered by a lack of global agreement on

standards. The Eureka 147 standard (DAB) for digital radio is the most commonly used and is coordinated by the World DMB Forum, which represents more than 30 countries. This standard of digital radio technology was defined in the late 1980s, and is now being introduced in many countries. Commercial DAB receivers began to be sold in 1999 and, by 2006, 500 million people were in the coverage area of DAB broadcasts, although by this time sales had only taken off in the UK and Denmark. In 2006 there were approximately 1,000 DAB stations in operation. There have been criticisms of the Eureka 147 standard and so a new 'DAB+' standard has been proposed.

To date the following standards have been defined for one-way digital radio:

(ii) Digital Audio Broadcasting Systems

- Eureka 147 (branded as DAB)
- 'DAB+'
- FM band in-band on-channel (FM IBOC):
  - HD Radio (OFDM modulation over FM and AM band IBOC sidebands)
  - FMeXtra (FM band IBOC subcarriers)
  - Digital Radio Mondiale extension (DRM+) (OFDM modulation over AM band IBOC sidebands)
- AM band in-band on-channel (AM IBOC):
  - HD Radio (AM IBOC sideband)
  - Digital Radio Mondiale (branded as DRM) for the short, medium and long wave-bands
- Satellite radio:
  - WorldSpace in Asia and Africa
  - Sirius in North America
  - XM radio in North America
  - MobaHo! in Japan and the Republic of (South) Korea
- ISDB-TSB
- Systems also designed for digital TV:
  - DMB
  - DVB-H
- Low-bandwidth digital data broadcasting over existing FM radio:
  - Radio Data System (branded as RDS)

(iii)Digital Television Broadcasting (DTV) Systems

- Digital Video Broadcasting (DVB)
- Integrated Services Digital Broadcasting (ISDB)
- Digital Multimedia Broadcasting (DMB)
- Digital Terrestrial Television (DTTV or DTT) to fixed mainly roof-top antennas:
  - DVB-T (based on OFDM modulation)
  - ISDB-T (based on OFDM modulation)

    - ATSC (based on 8VSB modulation)
    - T-DMB
- Mobile TV reception in handheld devices:
    - DVB-H (based on OFDM modulation)
    - MediaFLO (based on OFDM modulation)
    - DMB (based on OFDM modulation)
    - Multimedia Broadcast Multicast Service (MBMS) via the GSM Edge and UMTS cellular networks
    - DVB-SH (based on OFDM modulation)
- Satellite TV:
    - DVB-S (for Satellite TV)
    - ISDB-S
    - 4DTV
    - S-DMB
    - MobaHo!

Status by Country

(a) DAB adopters

Digital Audio Broadcasting (DAB), also known as Eureka 147, has been under development since the early eighties, has been adopted by around 20 countries worldwide. It is based around the MPEG-1 Audio Layer II audio codec and this has been co-ordinated by the WorldDMB. DAB receivers are selling well in some markets.

WorldDMB announced in a press release in November 2006, that DAB would be adopting the HE-AACv2 audio codec, which is also known as eAAC+. Also being adopted are the MPEG Surround format, and stronger error correction coding called Reed-Solomon coding. The update has been named DAB+.

DAB and DAB+ cannot be used for mobile TV because they do not include any video codecs. DAB related standards Digital Multimedia Broadcasting (DMB) and DAB-IP are suitable for mobile radio and TV both because they have MPEG 4 AVC and WMV9 respectively as video codecs. However a DMB video sub-channel can easily be added to any DAB transmission - as DMB was designed from the outset to be carried on a DAB subchannel. DMB broadcasts in Korea carry conventional MPEG 1 Layer II DAB audio services alongside their DMB video services.

(b) United States

The United States has opted for a proprietary system called HD Radio(TM) technology, a type of in-band on-channel (IBOC) technology. Transmissions use orthogonal frequency-division multiplexing, a technique which is also used for European terrestrial digital TV broadcast (DVB-T). HD Radio technology was developed and is licensed by iBiquity Digital Corporation.

The FM digital schemes in the U.S. provide audio at rates from 96 to 128 kilobits per second (kbit/s), with auxiliary "subcarrier" transmissions at up to 64 kbit/s. The AM digital schemes have data rates of about 48 kbit/s, with auxiliary services provided at a much lower data rate. Both the FM and AM schemes use lossy compression techniques to make the best use of the limited bandwidth.

The National Radio Systems Committee (NRSC) and the three IBOC companies began tests in December 1999. Results of these tests remain unclear, which in general describes the status of the terrestrial digital radio broadcasting effort in North America. Some terrestrial analog broadcast stations are apprehensive about the impact of digital satellite radio on their business, while others plan to convert to digital broadcasting as soon as it is economically and technically feasible.

While traditional terrestrial radio broadcasters are trying to "go digital", most major US automobile manufacturers are promoting digital satellite radio. HD Radio technology has also made inroads in the automotive sector with factory-installed options announced by BMW, Ford, Hyundai, Jaguar, Lincoln, Mercedes, MINI, Mercury, Scion, and Volvo. Beyond the U.S., commercial implementation of HD Radio technology is gaining momentum around the world.

Satellite radio is distinguished by its freedom from FCC censorship in the United States, its relative lack of advertising, and its ability to allow people on the road to listen to the same stations at any location in the country. Listeners must currently pay an annual or monthly subscription fee in order to access the service, and must install a separate security card in each radio or receiver they use.

Ford and Daimler AG are working with Sirius Satellite Radio, previously CD Radio, of New York City, and General Motors and Honda are working with XM Satellite Radio of Washington, D.C. to build and promote satellite DAB radio systems for North America, each offering "CD quality" audio and about a hundred channels.

Sirius Satellite Radio launched a constellation of three Sirius satellites during the course of 2000. The satellites were built by Space Systems/Loral and were launched by Russian Proton boosters. As for XM Satellite Radio, Sirius implemented a series of terrestrial ground repeaters where satellite signal would otherwise be blocked by large structures including natural structures and high-rise buildings.

XM Satellite Radio has a constellation of three satellites, two of which were launched in the spring of 2001, with one following later in 2005. The satellites are Boeing (previously Hughes) 702 comsats, and were put into orbit by Sea Launch boosters. Back-up ground transmitters (repeaters) will be built in cities where satellite signals could be blocked by big buildings.

The FCC has auctioned bandwidth allocations for satellite broadcast in the S band range, around 2.3 GHz.

The perceived wisdom of the radio industry is that the terrestrial medium has two great strengths: it is free and it is local. Satellite radio is neither of these things; however, in recent years, it has grown to make a name for itself by providing uncensored content (most notably, the crossover of Howard Stern from terrestrial radio to satellite radio) and commercial-free, all-digital music channels that offer similar genres to local broadcast favorites.

(c) Japan

Japan has started terrestrial sound broadcasting using ISDB-Tsb and MobaHO! 2.6 GHz Satellite Sound digital broadcasting.

(d) Korea

On 1 December 2005 South Korea launched its T-DMB service which includes both television and radio stations. T-DMB is a derivative of DAB with specifications published by ETSI. More than 110,000 receivers had been sold in one month only in 2005.

(e) Developing nations

Digital radio is now being provided to the developing world. A satellite communications company named WorldSpace is setting up a network of three satellites, including "AfriStar", "AsiaStar", and "AmeriStar", to provide digital audio information services to Africa, Asia, and Latin America. AfriStar and AsiaStar are in orbit. AmeriStar cannot be launched from the United States as Worldspace transmits on the L-band and would interfere with USA military as mentioned above.

Each satellite provides three transmission beams that can support 50 channels each, carrying news, music, entertainment, and education, and including a computer multimedia service. Local, regional, and international broadcasters are working with WorldStar to provide services.

A consortium of broadcasters and equipment manufacturers are also working to bring the benefits of digital broadcasting to the radio spectrum currently used for terrestrial AM radio broadcasts, including international shortwave transmissions. Over seventy broadcasters are now transmitting programs using the new standard, known as Digital Radio Mondiale (DRM), and commercial DRM receivers are available. DRM's system uses the MPEG-4 based standard aacPlus to code the music and CELP or HVXC for speech programs. At present these are priced too high to be affordable by many in the third world, however.

Low-cost DAB radio receivers are now available from various Japanese manufacturers, and WorldSpace has worked with Thomson Broadcast to introduce a village communications center known as a Telekiosk to bring communications

services to rural areas. The Telekiosks are self-contained and are available as fixed or mobile units.

(v) Two-way digital radio standards

- **Digital cellular telephony**:
  - GSM
  - UMTS (sometimes called W-CDMA)
  - TETRA
  - IS-95 (cdmaOne)
  - IS-136 (D-AMPS, sometimes called TDMA)
  - IS-2000 (CDMA2000)
  - iDEN
- **Wireless networking**:
  - Wi-Fi
  - HIPERLAN
  - Bluetooth
  - ZigBee

- **Military radio systems for Network-centric warfare**
  - JTRS (Joint Tactical Radio System - a flexible software-defined radio)
  -
    - SINCGARS (Single channel ground to air radio system)

- **Amateur packet radio**:
  - AX.25
- **Digital modems for HF**:
  - PACTOR
- **Satellite radio**:
  - Satmodems
- **Wireless local loop**:
  - Basic Exchange Telephone Radio Service
- **Broadband wireless access**:
  - IEEE 802.16

3.3 Terrestrial Television

Terrestrial television is a term which refers to modes of television broadcasting which do not involve satellite transmission. The term is uncommon in the United States while more common in Europe.

Terrestrial television broadcasting dates back to the very beginnings of television as a medium itself with the first long-distance public television broadcast from Washington, D.C., on April 7, 1927. Aside from transmission by high-flying planes moving in a loop using a system developed by Westinghouse called Stratovision, there was virtually no other method of television delivery until the

1950s with the beginnings of cable television, or *community antenna television* (CATV). The first non-terrestrial method of delivering television signals that in no way depended on a signal originating from a traditional terrestrial source began with the use of communications satellites during the 1960s and 1970s.

(i) Europe

In Europe, a planning conference ("ST61") held under the auspices of the International Telecommunications Union in Stockholm in 1961 allocated frequencies the Bands IV and V for the first time for broadcast television use. It also superseded the 1951 Plan (also made in Stockholm) which had first allocated Band II frequencies for FM radio and Band III frequencies for television.

Following the ST61 conference, UHF frequencies were first used in the UK in 1964 with the introduction of BBC2. In UK, VHF channels were kept on the old 405-line system, while UHF was used solely for 625-line broadcasts (which later used PAL colour). Television broadcasting in the 405-line system continued after the introduction of four analogue programmes in the UHF bands until the last 405-line transmitters was switched off on January 6, 1985. VHF Band III is still used in other countries around Europe for PAL broadcasts, though many have plans to phase it out. The success of terrestrial analogue television across Europe varies from country to country. Although each country has rights to a certain number of frequencies by virtue of the ST61 plan, not all of them have been brought into service.

(ii) North America

In the United States and most of the rest of North America as well, terrestrial television underwent a revolutionary transformation with the eventual acceptance of the NTSC standard for color television broadcasts in 1953. Later, Europe and the rest of the world either chose between the later PAL and SECAM color television standards, or adopted NTSC. Japan also uses a version of NTSC.

In addition to the threat from Cable Television, analog terrestrial television is now also subject to competition from satellite television and distribution of video and film content over the Internet. The technology of digital terrestrial television has been developed as a response to these challenges. The rise of digital terrestrial television, especially HDTV, may mark an end to the decline of broadcast television reception via traditional receiving antennas, which can receive over-the-air HDTV signals.

In North America, terrestrial broadcast television operates on TV channels 2 through 6 (VHF-low band, known as band I in Europe), 7 through 13 (VHF-high band, known as band III elsewhere), and 14 through 69 (UHF television band, elsewhere bands IV and V). Channel numbers represent actual frequencies used to broadcast the television signal. Additionally, television translators and boosters can be used to rebroadcast a terrestrial TV signal using an otherwise unused channel to cover areas with marginal reception.

By the mid 1990s, the interest in digital television across Europe was such that the CEPT convened the "Chester '97" conference to agree means by which digital television could be inserted into the ST61 frequency plan.

The introduction of digital television in the late 1990s and early years of the 21st century led the ITU to call a Regional Radio communication Conference to abrogate the ST61 plan and to put a new plan for digital broadcasting only in its place.

In December 2005 the EU has decided to cease all analogue television transmissions by the year 2012 and switch all terrestrial television broadcasting to digital (all EU countries have agreed on using DVB-T). The Netherlands completed the transition in December 2006, and some EU member states have decided to complete this switchover as early as 2008 (Sweden), and (Denmark) in 2009, while the UK began the switch over in late 2007 it will not be a nationwide switch over until mid 2012. Norway will cease all analogue television transmissions on 01.12.2009. Two member states (not specified in the announcement) have expressed concerns that they might not be able to proceed to the switchover by 2012 due to technical limitations, the rest of the EU member states are expected to stop analogue television transmissions by 2012.

Many countries are developing and evaluating digital terrestrial television systems.

In North America a specification laid out by the ATSC has become the standard for digital terrestrial television. In the United States the FCC has set a final deadline for the switch off of analog service for February 17, 2009. All television receivers must now include a digital tuner. In Canada, the Canadian Radio-television and Telecommunications Commission (CRTC), has set August 31, 2011 as the date that over-the-air analog transmission service will cease in most parts of the country except in Northern Canada.

3.4 High-Definition Television (HDTV)

HDTV is a digital television broadcasting system with higher resolution than traditional television systems (standard-definition TV, or SDTV). HDTV is digitally broadcast; the earliest implementations used analog broadcasting, but today digital television (DTV) signals are used, requiring less bandwidth due to digital video compression.

(i) Digital television (DTV)

DTV is the sending and receiving of moving images and sound by discrete (digital) signals, in contrast to the analog signals used by analog TV. The first country to make a wholesale switch to Digital Over-the-Air (terrestrial) broadcasting was the Netherlands, in 2006. This was followed by Finland and Sweden in 2007. In the United States, *full-power* television stations are scheduled to change over to digital in June 2009.

In Canada, the switch to digital is scheduled to happen August 31, 2011. China is scheduled to switch in 2015. In the United Kingdom, the digital switchover has different times for each part of the country; however, the whole of the UK will be digital by 2012. Brazil switched to digital in December 2, 2007 in major cities and it is estimated 7 years for complete signal expansion over all of the Brazilian territory.

While the majority of the viewers of over-the-air broadcasting in the USA watch full-power stations (which number about 1800), there are three other categories of TV stations in the USA: low-power stations, Class A stations, and TV translator stations. There is presently no deadline for these stations, about 7100 in number, to convert to digital broadcasting.

(ii) Formats and Bandwidth

Digital television supports many picture formats defined by the combination of size, aspect ratio (height to width ratio) and interlacing. With terrestrial broadcasting in the USA the range of formats can be coarsely divided into two categories: HDTV and SDTV. It should be noted that these terms by themselves are not very precise, and many subtle intermediate cases exist.

High-definition television (HDTV), one of several different formats that can be transmitted over DTV, uses one of two formats: 1280 × 720 pixels in progressive scan mode (abbreviated *720p*) or 1920 × 1080 pixels in interlace mode (*1080i*). Each of these utilizes a 16:9 aspect ratio. (Some televisions are capable of receiving an HD resolution of 1920 × 1080 at a 60 Hz progressive scan frame rate- known as 1080p60, but this standard is not currently used for transmission.) HDTV cannot be transmitted over current analog channels.

Standard definition TV (SDTV), by comparison, may use one of several different formats taking the form of various aspect ratios depending on the technology used in the country of broadcast.

Each commercial terrestrial DTV channel in North America is permitted to be broadcast at a data rate up to 19 megabits per second, or 2.375 megabytes per second. However, the broadcaster does not need to use this entire bandwidth for just one broadcast channel. Instead the broadcast can be subdivided across several video sub-channels of varying quality and compression rates, including non-video data-casting services that allow one-way high-bandwidth streaming of data to computers.

A broadcaster may opt to use a standard-definition digital signal instead of an HDTV signal, because current convention allows the bandwidth of a DTV channel (or "multiplex") to be subdivided into multiple sub-channels (similar to what most FM stations offer with HD Radio), providing multiple feeds of entirely different programming on the same channel. This ability to provide either a single HDTV feed or multiple lower-resolution feeds is often referred to as distributing

one's "bit budget" or multicasting. This can sometimes be arranged automatically, using a statistical multiplexer (or "stat-mux"). With some implementations, image resolution may be less directly limited by bandwidth; for example in DVB-T, broadcasters can choose from several different modulation schemes, giving them the option to reduce the transmission bit rate and make reception easier for more distant or mobile viewers.

(iii) Reception

There are a number of different ways to receive digital television. One of the oldest means of receiving DTV (and TV in general) is using an antenna (known as an *aerial* in some countries). This way is known as Digital Terrestrial Television (DTT). With DTT, viewers are limited to whatever channels the antenna picks up. Signal quality will also vary.

Other ways have been devised to receive digital television. Among the most familiar to people are digital cable and digital satellite. In some countries where transmissions of TV signals are normally achieved by microwaves, digital MMDS is used. Other standards, such as DMB and DVB-H, have been devised to allow handheld devices such as mobile phones to receive TV signals. Another way is IPTV, that is receiving TV via Internet Protocol, relying on DSL or optical cable line. Finally, an alternative way is to receive digital TV signals via the open Internet. For example, there is a lot of P2P Internet Television software that can be used to watch TV on computer.

(iv) Interaction

Modern DTV systems are able to provide interaction between the end-user and the broadcaster through the use of a return path. With the exceptions of coaxial and fiber optic cable, which can be bidirectional, a dialup modem, Internet connection, or other method is typically used for the return path with unidirectional networks such as satellite or antenna broadcast.

In addition to not needing a separate return path, cable also has the advantage of a communication channel localized to a neighborhood rather than a city (terrestrial) or an even larger area (satellite). This provides enough customizable bandwidth to allow true video on demand.

(v) Advantages to conversion

DTV has several advantages over analog TV, the most significant being that digital channels take up less bandwidth (and the bandwidth needs are continuously variable, at a corresponding cost in image quality depending on the level of compression). This means that digital broadcasters can provide more digital channels in the same space, provide high-definition television service, or provide other non-television services such as multimedia or interactivity. DTV also permits special services such as multiplexing (more than one program on the same channel), electronic program guides and additional languages, spoken or subtitled. The sale of non-television services may provide an additional revenue source.

Digital signals react less fiercely to interference than analog signals. For example, common problems with analog television include ghosting of images, noise from weak signals, and many other potential problems. Digitized signals don't suffer from ghosting or noise because DTV Tuners and converter boxes receive numeric information by the antenna. The decoder only needs enough information to put the picture together. The only way it fails is when the decoder does not receive enough information from the antenna - there is too much interference in the signal for the decoder to read the number and produce the picture.

3.5 Cable TV

Most cable TV networks deliver TV channels on analog mode to the subscribers. In the beginning cable TV operators were able to show only 6-14 analog channels through their networks. Since then, the channel providing capacity has been enhanced by extending the bandwidth of the cable TV distribution system. From a bandwidth of 225 MHz in the early days of cable TV, the networks progressively enhanced capacity to 300 MHz, 450 MHz, 550 MHz, 750 MHz and now to 860 MHz, which is the largest available cable TV bandwidth worldwide. In the future this could get enhanced to 1000 MHz. The bandwidth of cable systems and maximum possible analog channels on such systems are given in Table3.1:

Table 3.1
Bandwidth and Channels

Bandwidth	Maximum Number of Channels
300 MHz	36
450 MHz	54
550 MHz	67
750 MHz	92
860 MHz	106

In cities most of the Cable TV homes receive 65 to 100 channels. Almost all networks in the cities utilize a combination (Hybrid) of Optical fiber and coaxial cables. Networks often cater to typically 5000 customers per head end. The smallest cable networks in the country typically deliver upto 30 channels over a 300 MHz bandwidth.

Initially a cable TV operator had to install separate dish antennas for receiving signals from each broadcaster. With the increasing number of broadcasters, number of such antennas also increased and most of the cable TV operators were not able to install all the dish antennas due to shortage of space or finances. This necessitated the need of the aggregator and resulted in the entry of Multi System Operators (MSOs). The MSOs aggregate the signals obtained from different broadcasters and provide these aggregated signals to cable TV operators either themselves or through their franchisees/ distributors.

(i) Digitalization of Cable TV networks

A single analog video signal occupies 8MHz of bandwidth on the cable. By using bandwidth efficient digital modulation techniques such as Quadrature Amplitude Modulation (QAM), data rates in excess of 56Mb/s can be transmitted within 8MHz band. Using Motion Picture Expert Group (MPEG) compression techniques, a high quality video signal can be compressed into 3-4Mbps data stream. Therefore, by upgrading a cable plant from analog to digital TV transmission, one can achieve more channel capacity. The 800 MHz of available downstream bandwidth in a modern cable plant could, in theory, support over a thousand channels of video services.

(ii) Conditional Access System (CAS)

Conditional Access System is utilized to introduce addressability in cable TV networks providing signals in digital format. A Conditional Access System (CAS) ensures that only authorized subscribers are able to view a particular programming package. A conditional access system is installed in set-top box (STB) or integrated receiver decoder. This is an electronic box, which contains the necessary hardware, software, and interfaces to select, receive, unscramble and view the programs. Since signals are scrambled in CAS, only those viewers with a valid contract are authorized to unscramble and view the chosen programs. Moreover, when the viewer chooses a pay channel or a program, the information is stored and updated on a database, which includes subscriber details, method of payment, and services purchased. A CAS may be used not only for selecting pay channels, but can also be used for other services, like Video on Demand, etc. In some cases, encrypted programs may also be received from different mechanisms like cable, satellite, terrestrial broadcasting etc on the same STB.

(iii) Head-end In The Sky (HITS)

In this system the Head End is placed on the satellite. In HITS all the pay channels are aggregated and again uplinked to a satellite after encryption of channels. At cable head-end these encrypted pay channels in digital format are down linked using a single satellite antenna, trans-modulated and sent to the subscribers. At the subscribers end, Set Top Boxes de-encrypt the pay channels based on authorization received from Subscriber Management System (SMS). As per the present practice, the cable TV operator may downlink Free to Air (FTA) channels in analogue format and send this to the subscriber on the same cable network. The STB will pass these FTA analogue channels to the TV set in the usual manner. It is also possible to provide FTA digital channels to the cable TV operators through HITS platform. Such signals will be delivered to subscriber's television set through STB by the cable TV operator.

3.6 Multi-channel Multipoint Distribution System (MMDS)

Multi-channel Multipoint Distribution Service, also known as MMDS or Wireless Cable, is a wireless telecommunications technology, used for general-purpose broadband networking or, more commonly, as an alternative method of cable television programming reception. MMDS is used in Canada, Mexico,

Dominican Republic, Iceland, Ireland, Russia, Slovenia, Brazil, Barbados, Australia, Nigeria, Pakistan, Sri Lanka, Thailand, Uruguay, India, Belarus and Cambodia. It is most commonly used in sparsely populated rural areas, where laying cables is not economically viable, although some companies may also offer MMDS services in urban areas.

The MMDS band uses microwave frequencies from 2 GHz to 3 GHz in range. Reception of MMDS-delivered television signals is done with a special rooftop microwave antenna and a set-top box for the television receiving the signals. The antenna usually has an integrated down-converter to transmit the signals at frequencies compatible with terrestrial TV tuners down on the coax (much like on satellite dishes where the signals are converted down to frequencies more compatible with standard TV coaxial cabling), some larger antennas utilize an external down-converter. The receiver box is very similar in appearance to an analogue cable television receiver box.

The MMDS band is separated into eleven "channels" which are auctioned off like other bands. The idea was that entities could own several channels and multiplex several television and radio channels onto each channel using digital technology. Each "channel" was capable of 10 Mbit/s, exclusive of any forward error correction technology that is required for this type of technology. MMDS will be obsolete by the newer 802.16 WiMax standard.

3.7 Satellite Television

Satellite television is television delivered by the means of communications satellite and received by a satellite dish and set-top box. In many areas of the world it provides a wide range of channels and services, often to areas that are not serviced by terrestrial or cable providers.

Satellites used for television signals are generally in either naturally highly elliptical (with inclination of +/-63.4 degrees and orbital period of about 12 hours, also known as Molniya orbit) or geostationary orbit 37,000 km (22,300 miles) above the earth’s equator.

Satellite television, like other communications relayed by satellite, starts with a transmitting antenna located at an uplink facility. Uplink satellite dishes are very large, as much as 9 to 12 meters (30 to 40 feet) in diameter. The increased diameter results in more accurate aiming and increased signal strength at the satellite. The uplink dish is pointed toward a specific satellite and the uplinked signals are transmitted within a specific frequency range, so as to be received by one of the transponders tuned to that frequency range aboard that satellite. The transponder 'retransmits' the signals back to Earth but at a different frequency band (a process known as translation, used to avoid interference with the uplink signal), typically in the C-band (4–8 GHz) or K_u-band (12–18 GHz) or both. The leg of the signal path from the satellite to the receiving Earth station is called the downlink.

A typical satellite has up to 32 transponders for Ku-band and up to 24 for a C-band only satellite, or more for hybrid satellites. Typical transponders each have a bandwidth between 27 MHz and 50 MHz. Each geo-stationary C-band satellite needs to be spaced 2 degrees from the next satellite (to avoid interference). For K_u the spacing can be 1 degree. This means that there is an upper limit of 360/2 = 180 geostationary C-band satellites and 360/1 = 360 geostationary K_u-band satellites. C-band transmission is susceptible to terrestrial interference while K_u-band transmission is affected by rain (as water is an excellent absorber of microwaves at this particular frequency).

The down linked satellite signal, quite weak after traveling the great distance, is collected by a parabolic receiving dish, which reflects the weak signal to the dish's focal point. Mounted on brackets at the dish's focal point is a device called a feed horn. This feed horn is essentially the flared front-end of a section of waveguide that gathers the signals at or near the focal point and 'conducts' them to a probe or pickup connected to a low-noise block down converter or LNB. The LNB amplifies the relatively weak signals, filters the block of frequencies in which the satellite TV signals are transmitted, and converts the block of frequencies to a lower frequency range in the L-band range. The evolution of LNBs was one of necessity and invention.

The original C-Band satellite TV systems used a Low Noise Amplifier connected to the feed horn at the focal point of the dish. The amplified signal was then fed via very expensive 50 Ohm impedance coaxial cable to an indoor receiver or in other designs fed to a down converter (a mixer and a voltage tuned oscillator with some filter circuitry) for down conversion to an intermediate frequency. The channel selection is controlled, typically by a voltage tuned oscillator with the tuning voltage being fed via a separate cable to the head end.

The satellite receiver demodulates and converts the signals to the desired form (outputs for television, audio, data, etc.). Sometimes, the receiver includes the capability to unscramble or decrypt; the receiver is then called an Integrated Receiver/Decoder or IRD. The cable connecting the receiver to the LNBF or LNB must be of the low loss type RG-6, quad shield RG-6 or RG-11, etc. It cannot be standard RG-59.

Analog television distributed via satellite is usually sent scrambled or unscrambled in NTSC, PAL, or SECAM television broadcast standards. The analog signal is frequency modulated and is converted from an FM signal to what is referred to as baseband. This baseband comprises the video signal and the audio sub-carriers. The audio sub-carrier is further demodulated to provide a raw audio signal. If the signal is a digitized television signal or multiplex of signals, it is typically QPSK.

In general, digital television including that transmitted via satellites, are generally based on open standards such as MPEG and DVB-S.

There are three primary types of satellite television usage: reception direct by the viewer, reception by local television affiliates, or reception by head-ends for distribution across terrestrial cable systems.

Direct to the viewer reception includes direct broadcast satellite or DBS and television receive-only or TVRO, both used for homes and businesses including hotels, etc.

3.8 Direct To Home

In the world of television distribution, Direct-To-Home" (DTH) is sometimes referred to as "mini-dish" system which uses the upper portion of the K_u band, as well as portions of the K_a band.

Modified system can also be run on C-band satellites and have been used by some networks in the past to get around legislation by some countries against reception of K_u-band transmissions.

Most of the DTH systems use the DVB-S standard for transmission. With Pay-TV services, the data stream is encrypted and requires proprietary reception equipment. While the underlying reception technology is similar, the Pay-TV technology is proprietary, often consisting of a Conditional Access Module and smart card.

This measure assures satellite television providers that only authorized, paying subscribers have access to Pay TV content but at the same time can allow free-to-air (FTA) channels to be viewed even by the people with standard equipment available in the market.

Today, most satellite TV customers in developed television markets get their programming through a DTH service provider. The provider selects programs and broadcasts them to subscribers as a set package. Basically, the provider's goal is to bring dozens or even hundreds of channels to the customer's television in a form that approximates the competition from Cable TV. Unlike earlier programming, the provider's broadcast is digital, which means it has high picture and stereo sound quality. There are five major components involved in a direct to home (DTH) satellite system: the programming source, the broadcast center, the satellite, the satellite dish and the receiver.

Programming sources are simply the channels that provide programming for broadcast. The provider (the DTH platform) doesn't create original programming itself; it pays other companies for the right to broadcast their content via satellite. In this way, the provider is kind of like a broker between the viewer and the actual programming sources. (Cable television networks also work on the same principle.) The broadcast center is the central hub of the system. At the broadcast center or the Play out & Uplink location, the television provider receives signals from various programming sources, compresses using digital compression,

if necessary scrambles it and beams a broadcast signal to the satellite being used by it. The satellites receive the signals from the broadcast station and rebroadcast them to the ground. The viewer's dish picks up the signal from the satellite (or multiple satellites in the same part of the sky) and passes it on to the receiver in the viewer's house. The receiver processes the signal and passes it on to a standard television.

The broadcast center converts all of this programming into a high-quality, uncompressed digital stream. At this point, the stream contains a vast quantity of data - about 270 megabits per second (Mbit/s) for each channel. In order to transmit the signal from there, the broadcast center has to compress it. Otherwise, it would be too big for the satellite to handle. The providers use the MPEG-2 compressed video format - the same format used to store movies on DVDs. With MPEG-2 compression, the provider can reduce the 270-Mbit/s stream to about 3 or 10 Mbit/s (depending on the type of programming). This is the crucial step that has made DTH service a success. With digital compression, a typical satellite can transmit about 200 channels. Without digital compression, it can transmit about 30 channels. At the broadcast center, the high-quality digital stream of video goes through an MPEG-2 encoder, which converts the programming to MPEG-2 video of the correct size and format for the satellite receiver in a house.

After the video is compressed, the provider needs to encrypt it in order to keep people from accessing it for free. Encryption scrambles the digital data in such a way that it can only be decrypted if the receiver has the correct decoding satellite receiver with decryption algorithm and security keys. Once the signal is compressed and encrypted, the broadcast center beams it directly to one of its satellites.

The satellite picks up the signal, amplifies it and beams it back to Earth, where viewers can pick it up.

A satellite dish is just a special kind of antenna designed to focus on a specific broadcast source. The standard dish consists of a parabolic (bowl-shaped) surface and a central feed horn. To transmit a signal, a controller sends it through the horn, and the dish focuses the signal into a relatively narrow beam. The receiving dish works in the exact opposite way of the transmitter. When a beam hits the curved dish, the parabola shape reflects the radio signal inward onto a particular point, just like a concave mirror focuses light onto a particular point. The curved dish focuses incoming radio waves onto the feed horn. In this case, the point is the dish's feed horn, which passes the signal onto the receiving equipment. A new dish design uses two or more horns to pick up different satellite signals. As the beams from different satellites hit the curved dish, they reflect at different angles so that one beam hits one of the horns and another beam hits a different horn. The central element in the feed horn is the low noise blockdown converter, or LNB. The LNB amplifies the signal bouncing off the dish and filters

out the noise. The LNB passes the amplified, filtered signal to the satellite receiver inside the viewer's house.

The end component in the entire satellite TV system is **the receiver**. The receiver has four essential jobs: It de-scrambles the encrypted signal. In order to unlock the signal, the receiver needs the proper decoder chip for that programming package. The provider can communicate with the chip, via the satellite signal, to make necessary adjustments to its decoding programs. The provider may occasionally send signals that disrupt illegal de-scramblers, as an electronic counter measure (ECM) against illegal users. It takes the digital MPEG-2 signal and converts it into an analog format that a standard television can recognize.

3.9 Internet Protocol Television (IPTV)

The official definition approved by the International Telecommunication Union focus group on IPTV (ITU-T FG IPTV) is as follows:

> *"IPTV is defined as multimedia services such as television/ video/ audio/ text/ graphics/ data delivered over IP based networks managed to provide the required level of quality of service and experience, security, interactivity and reliability."*

IPTV is a system where a digital television service is delivered using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. A general definition of IPTV is television content that, instead of being delivered through traditional broadcast and cable formats, is received by the viewer through the technologies used for computer networks.

For residential users, IPTV is often provided in conjunction with Video on Demand and may be bundled with Internet services such as Web access and VoIP. The commercial bundling of IPTV, VoIP and Internet access is referred to as "Triple Play" service (when these three are offered with mobility, the service is referred to as "Quadruple Play"). IPTV is typically supplied by a service provider using a closed network infrastructure.

In the past, this technology has been restricted by low broadband penetration. In the coming years, however, residential IPTV is expected to grow at a brisk pace as broadband is expected to be available to more than 400 million households worldwide by the year 2010. Many of the world's major telecommunications providers are exploring IPTV as a new revenue opportunity from their existing markets and as a defensive measure against encroachment from more conventional Cable Television services. Also, there are a growing number of IPTV installations within schools, universities, corporations and local institutions.

(i) Architecture of IPTV

Depending on the network architecture of the Service Provider, there are two main types of Video Server architectures that can be considered for IPTV deployment, Centralized, and Distributed.

The Centralized Architecture model is a relatively simple and easy to manage solution. For example, as all contents are stored in Centralized servers, it does not require a comprehensive content distribution system. Centralized Architecture is generally good for a network that provides relatively small VOD service deployment, has adequate core and edge bandwidth and has an efficient Content Delivery Network (CDN).

A Distributed Architecture is just as scalable as the Centralized model, however it has bandwidth usage advantages and inherent system management features that are essential for managing a larger server network. Operators who plan to deploy a relatively large system should therefore consider implementing a Distributed Architecture model right from the start. Distributed Architecture requires intelligent and sophisticated content distribution technologies to augment effective delivery of multimedia contents over service provider's network.

(ii) Key Areas of an End-to-End IPTV id Technology Solution

When considering deploying a Telco IPTV service, understanding the technical implications of delivering the solution should be of paramount importance. Within the overall technical parameters of an IPTV service rollout, there are four key areas that need to be addressed to ensure a robust and scalable service delivery: content distribution, middleware, transport infrastructure and customer premise equipment.

The content distribution module contains live encoding platforms, video file repository and IPTV video servers which are the key elements enabling video feeds for an IPTV service.

In general, content distribution, processing and adaptation are all part of the functions of a TV head end.

While the live video encoder and IPTV video server are conceptually considered to be part of the TV [head end], they not necessarily need to be placed at the same physical location. Multicast video sources are usually located at the top level of the core network for better bandwidth efficiency, whereas uni-cast IPTV video sources are commonly installed at the local PoP level to minimize core bandwidth usage.

(iii) IMS architecture for IPTV

There is a growing standardization effort on the use of the 3GPP IP Multimedia Subsystem (IMS) as architecture for supporting IPTV services in carriers networks. Both ITU-T and ETSI are working on so-called "IMS-based

IPTV" standards. The benefits of this approach are obvious. Carriers will be able to offer both voice and IPTV services over the same core infrastructure and the implementation of services combining conventional TV services with telephony features (e.g. caller ID on the TV screen) will become straightforward.

(iv) Protocols

IPTV covers both live TV (multicasting) as well as stored video (Video on Demand VOD). The playback of IPTV requires either a personal computer or a set-top box connected to a TV. Video content is typically compressed using either a MPEG-2 or a MPEG-4 codec and then sent in an MPEG transport stream delivered via IP Multicast in case of live TV or via IP uni-cast in case of Video on Demand. IP Multicast is a method in which information can be sent to multiple computers at the same time. The newly released (MPEG-4) H.264 codec is increasingly used to replace the older MPEG-2 codec.

In standards-based IPTV systems, the primary underlying protocols used are:

- Live TV uses IGMP version 2 or IGMP version 3 for IPv4 for connecting to a multicast stream (TV channel) and for changing from one multicast stream to another (TV channel change).
- VOD is using the Real Time Streaming Protocol (RTSP).
- N-PVR (Network-based Personal Video Recorder) is also using the Real Time Streaming Protocol (RTSP).

Network Personal Video Recording is a consumer service where real-time broadcast television is captured in the network on a server allowing the end user to access the recorded programs on the schedule of their choice, rather than being tied to the broadcast schedule. The NPVR system provides time-shifted viewing of broadcast programs, allowing subscribers to record and watch programs at their convenience, without the requirement of a truly personal PVR device. It could be compared as a "PVR that is built into the network" -- however that would be slightly misleading unless the word "Personal" is, of course, changed to "Public" for this context.

Subscribers can choose from the programs available in the network-based library, when they want, without needing yet another device or remote control. However, many people would still prefer to have their own PVR device, as it would allow them to choose exactly what they want to record. This bypasses the strict copyright and licensing regulations, as well as other limitations, that often prevent the network itself from providing "on demand" access to certain programs.

Currently, the only alternatives to IPTV are traditional TV distribution technologies such as terrestrial, satellite and cable. However, cable can be upgraded to two-way capability and can thus also carry IPTV.
IPTV over satellite

Although IPTV and conventional satellite TV distribution have been seen as complementary technologies, they are likely to be increasingly used together in hybrid IPTV networks that deliver the highest levels of performance and reliability. IPTV is largely agnostic to the transmission medium, and IP traffic is already routinely carried by satellite for Internet backbone trunking and corporate VSAT networks. The use of satellite to carry IP is fundermental to overcoming the greatest shortcoming of IPTV over terrestrial cables – the speed/bandwidth of the connection.

The copper twisted pair cabling that forms the last mile of the telephone/broadband network in many countries is not able to provide a sizeable proportion of the population with an IPTV service that matches even existing terrestrial or satellite digital TV distribution. For a competitive multi-channel TV service, a connection speed of 20Mbps is likely to be required, but unavailable to most potential customers. The increasing popularity of high definition TV (with twice the data of SD video) increases connection speed requirements, or limits IPTV service quality and connection eligibility, yet further.

However, satellites are capable of delivering in excess of 100Gbps via multi-spot beam technologies, making satellite a clear emerging technology for implementing IPTV networks. Satellite distribution can be included in IPTV network architecture in several ways. Simplest to implement is an IPTV-DTH architecture, in which hybrid DVB/broadband set-top boxes in subscriber homes integrate satellite and IP reception to give near-infinite bandwidth with return channel capabilities. In such a system, many live TV channels may be multicast via satellite (IP-encapsulated or as conventional DVB digital TV) with stored video-on-demand transmission via the broadband connection. Arqiva's Satellite Media Solutions Division suggests "IPTV works best in a hybrid format. For example, you would use broadband to receive some content and satellite to receive other, such as live channels.

An alternative approach is the IPTV version of the Headend in the Sky cable TV solution. Here, multiple TV channels are distributed via satellite to the ISP or IPTV provider's point of presence (POP) for IP-encapsulated distribution to individual subscribers as required by each subscriber.

This can provide a huge selection of channels to subscribers without overburdening Internet trunking to the POP, and enables an IPTV service to be offered to small or remote operators outside the reach of terrestrial high speed broadband connection.

While the future development of IPTV probably lies with a number of coexisting architectures and implementations, it's clear that broadcasting of high bandwidth applications such as IPTV is accomplished more efficiently and cost-effectively using satellite and it's predicted that the majority of global IPTV growth will be fuelled by hybrid networks.

The IP-based platform offers significant advantages, including the ability to integrate television with other IP-based services like high speed Internet access and VoIP.

A switched IP network also allows for the delivery of significantly more content and functionality. In a typical TV or satellite network, using broadcast video technology, all the content constantly flows downstream to each customer, and the customer switches the content at the set-top box. The customer can select from as many choices as the telecommunications, cable or satellite company can stuff into the "pipe" flowing into the home. A switched IP network works differently. Content remains in the network, and only the content the customer selects is sent into the customer's home. That frees up bandwidth, and the customer's choice is less restricted by the size of the "pipe" into the home. This also implies that the customer's privacy could be compromised to a greater extent than is possible with traditional TV or satellite networks. It may also provide a means to hack into, or at least disrupt the private network.

(v) Interactivity

An IP-based platform also allows significant opportunities to make the TV viewing experience more interactive and personalized. The supplier may, for example, include an interactive program guide that allows viewers to search for content by title or actor's name, or a picture-in-picture functionality that allows them to "channel surf" without leaving the program they're watching. Viewers may be able to look up a player's stats while watching a sports game, or control the camera angle. They also may be able to access photos or music from their PC on their television, use a wireless phone to schedule a recording of their favorite show, or even adjust parental controls so their child can watch a documentary for a school report, while they're away from home.

Another advantage of an IP-based network is the opportunity for integration and convergence. This opportunity is amplified when using IMS-based solutions. Converged services imply interaction of existing services in a seamless manner to create new value added services. One good example is On-Screen Caller ID, getting Caller ID on your TV and the ability to handle it. IP-based services will help to enable efforts to provide consumers anytime-anywhere access to content over their televisions, PCs and cell phones and to integrate services and content to tie them together. Within businesses and institutions, IPTV eliminates the need to run a parallel infrastructure to deliver live and stored video services. AS IPTV is a two way protocol the ISP knows which program is being watched.

3.10 Mobile TV

Mobile TV is the latest technology where the TV services are streamed on to the mobile or hand-held devices. Mobile TV is going to get more and more prevalent over the next couple of years. There is lot of momentum in the area, even if there are a few commercial products so far.

Already, many mobile operators offer a selection of television channels or individual shows, which are streamed across their third-generation (**3G**) networks. But sending an individual data stream to each viewer is inefficient and will be unsustainable in the long run if mobile TV takes off. So the general consensus is that 3G streaming is a prelude to the construction of dedicated mobile- TV broadcast networks, which transmit digital TV signals on entirely different frequencies to those used for voice and data. There are three main standards: **DVB-H** (Digital Video Broadcasting - Handhelds), favored in Europe; **DMB** (Digital Multimedia Broadcasting), which has been adopted in South Korea and Japan; and **Media FLO** , which is being rolled out in America. Watching TV using any of these technologies requires a TV -capable handset, of course. Among the three technologies, DVB-H was officially adopted by ETSI (the European Telecommunications Standards Institute) as the standard for mobile TV services in Europe.

Just as there are several competing mobile- TV technologies, there are also many possible business models. Mobile operators might choose to build their own mobile- TV broadcast networks; or they could form a consortium and build a shared network; or existing broadcasters could build such networks. Some channels will be given away for free, while others would be for paying subscribers only. The outcome will vary from country to country, depending on the regulatory environment and the availability of spectrum.

Among the various mobile TV technologies, the likeliest near-term solution will be to unify under the ETSI-endorsed DVB-H standard. It is considered to be is the best delivery system currently available for most markets, according to many of the operators and vendors.

DVB-H is a terrestrial digital TV standard that uses less power in receiving client than DVB-T (DVB Terrestrial), and allows the receiving device to move freely while receiving the transmission, thus making it ideal for mobile phones and handheld computers to receive digital TV broadcasting over the digiTV network *(without using mobile phone networks at all)* .

The basic DVB-T television standard has been modified to enable the receivers to be less power hungry, as DVB-T is used in an environment where power consumption is not a major consideration. This power reduction has been achieved by time slicing so that the receiver is only switched on in those time intervals when viewing the channel of interest. These intervals could be anything between a few milliseconds and a few seconds. It therefore reduces power consumption by being switched off for the rest of the time when non-required data is being transmitted. There is therefore a tradeoff between the data rate required for the service and how much this can be packed into short bursts to save the battery power of the receiver.

Like DMB, DVB-H uses COFDM but with a bandwidth of either 6, 7, or 8 MHz. Additionally it uses a range of different types of modulation from QPSK up to 64QAM and this enables it to have a very high data rate. However it is more susceptible to signal variations and synchronization problems. Additionally higher transmitter powers are required than those needed for DMB. Also frequencies that are likely to be used have not yet been allocated but it is thought they might be within the existing television bands. The wide RF bandwidth also means that current drain is increased, as wide bandwidth amplifiers are inherently more power hungry.

As it is really just an extension to DVB-T, DVB-H uses the same specs DVB-T. Video is normally encoded with MPEG-2 *(but can be encoded with MPEG-1 as well, although very rarely used)* and the standard, just like its other siblings DVB-C (Cable), DVB-S (Satellite) and DVB-T, is mostly used in Europe.

Benefits of DVB-H include reduction in battery consumption by 90% due to time-slicing technology, efficient use of bandwidth enables up to 55 mobile channels plus scalability, support by publicly available air interface specifications helping to drive device interoperability and market development and security with end-to-end control of stream encryption, generation of decryption keys and delivery of keys to consumers in a billing-integrated way.

3.11 Teleport

Teleportation is the transfer of matter from one place to another, more or less instantaneously, either by paranormal means or through technological artifice. One proposed means of teleportation is the transmission of data which is used to precisely reconstruct an object or organism at its destination. Teleport facility here means is a commercial infrastructure that can provide uplinking services to various satellites in the geostationary orbit for the purpose of television channel broadcasting.

An **uplink** is the portion of a communications link used for the transmission of signals from an Earth terminal to a satellite.

Chapter 4

Present Status of Electronic Media/Existing Market in Pakistan

4.1 Cable TV

The Cable TV trend started in Pakistan as broadcasting signals from a house owning a satellite dish to others in the neighbourhood in the 1990s. Pakistan Telecommunication Authority started regulating this service under Pakistan Telecommunication Act 1996. In the year 2002 government entrusted PEMRA with the task to regulate the establishments of the cable networks.

(i) Cable TV Licensing Regime

Cable TV industry in Pakistan is regulated by the provisions of Pakistan Electronic Media Regulatory Authority (PEMRA) Ordinance, 2002. A company registered with the Security and Exchange Commission of Pakistan under the Companies Ordinance, 1984 only is eligible to apply for Cable TV License. For seeking license, one has to submit the application form along with all the necessary documents to the Regional office of PEMRA in the respective area. After scrutiny of the application form and documents, the Regional Office of PEMRA forward the application to Cable TV Wing and that Wing on receipt of all the mandatory documents is responsible to issue Cable TV license. License fee varies according to the size of network in term of subscribers and can be as low as Rs.10,000/- and as high as Rs.1,750,000/-.

(a) Cable TV Technologies

Cable TV service is provided by transmitting or re-transmitting audio-visual programs through cables or Multi-channel Multi-distribution Service (MMDS). A head-end is used for receiving and processing the programs for further transmission or distribution to the subscribers through a system established to distribute television programs for reception by multiple subscribers via a set of closed transmission paths including terrestrial wireless and comprising coaxial or fiber-optic cable, trunk amplifiers, line extender amplifiers, return amplifiers, line isolators, passive devices, connectors and subscriber-drops. Service point, an outlet on the system, is used for monitoring the system parameters.

TV de-scramblers or decoders are used for reception of programs through satellite or other means of telecommunication and set-top box are used for receiving and decoding encrypted television signal for onward transmission to the subscribers. Also, up linking is used for transmission of audio-video signal from ground transmission facility to a satellite in order to transmit programs within or outside Pakistan.

(b) Standards

PEMRA has issued “Standards for Cable TV” Regulations 2003 for mandating technical and other QoS standards of cable TV networks.

- Technical Standards

○ Signal Leakage

A Cable TV Operator shall ensure that the signal leakage from a cable television system shall be within the limits specified in Table-4.1.

Table-4.1
Signal Leakage, Pakistan, 2009

Frequencies (MHz)	Signal Leakage Limit (JV/meter)	Distance (meter)
Up to and including 54	15	30
Over 54	20	3

The carrier-to-noise ratio for each television channel received at subscriber's end of the subscriber's drop shall not be less than 45 dB.

○ System/ Equipment Layout and Location

- A Cable Television Operator shall establish the head-end facilities in an area which is easily accessible to its subscribers and authorized officers and does not cause nuisance to people living in residential areas. Provided that no objection certificate (NOC) has been obtained from all relevant organizations, where required.
- A Cable Television Operator shall ensure that the distribution cable does not become nuisance to the public and does not pose a hazard to people, animals and the environment, besides the security of the medium itself:

  - In case where the distribution cable has to be buried in ground, the specifications given in Table-4.2 shall be complied with:

Table-4.2
Specifications for Buried Cable, Pakistan, 2009

Area	Standard
In case of public areas, where the distribution cable has to be buried under road, footpaths etc.	PVC pipes shall be used which shall be buried at least one foot below the ground level.
In all other areas	The distribution cable shall be passed in trenches with bricks on three sides (two sides and on top) and is filled with sand.

  - In case where the medium has to be laid overhead, the Cable Television Operator shall ensure that the distribution cable is installed at a sufficient height, out of reach of people and vehicles passing under it and that it is properly clamped to the poles. The clearance of the distribution cable shall at least be as given in Table-.3.

Table-4.3
Clearance for Overhead Cable, Pakistan, 2009

In case:	Minimum Ground Clearance
Where vehicles, people, animal etc pass under it	14 feet
All other areas	11 feet

Provided that HT electricity poles (on which 11 kV and above live lines are strung) are not used for the purpose of laying the distribution cable.

Provided further that in case of using electricity/ telephone/ railway poles, disturbance from external sources i.e. electricity, telephone lines etc. does not cause interference in the distribution cable which may result in the inferior quality of service to the subscribers and that all the requirements laid down in Section 2(b) are fulfilled. The clearance between the lines and the distribution cable shall be maintained as given in Table-4.4.

Table-4.4
Clearance between the Lines, Pakistan, 2009

In case:	Minimum clearance between the distribution cable and the lines
Where the distribution cable has to be strung on LT live lines poles (400/220 V)	3 feet
Where the distribution cable has to be strung on communication lines.	2 feet

- A Cable Television Operator shall ensure that its cable system does not cause interference or harm to the equipment of subscribers and other systems that may be connected to its system.

- In case of an expansion/ construction of the cable system, the Cable Television Operator shall ensure that the work is undertaken only after obtaining proper permission/ NOC from the relevant agencies/ offices in case of digging roads and using other utilities poles etc.

(c) Quality of Service

○ Service Reliability

A Cable Television Operator shall take all necessary steps to avoid interruption of cable service to its subscribers.

- **Maintenance of Record**
  A Cable Television Operator shall maintain a record, which shall be available for inspection by the Authority or its authorized officer with all the relevant information.

- **New Connection**
  A Cable Television Operator shall ensure that cable service is provided to an applicant within 48 hours after payment of installation fee and completion of all other formalities:

- **Monthly Billing Procedure**
  - Bill to be delivered in the first week of the following month.
  - One month advance notice in case of a variation in the monthly charges.
  - Convenient process for collection with proper receipt.
  - Representative of Cable Operator should carry proper identification documents along with his photograph.
  - Seven days notice for disconnection in case of default by subscriber for two consecutive months after serving the notice of Termination of Service with reasons.

- **Procedure for change in TV Channels**
  A Cable TV Operator shall give 48 hours notice, in writing, in case of any change within the eligible television channels.

- **Complaints Handling Procedure**
  A Cable TV Operator shall:

  - Establish a Customer Service Center operating 24 hours a day, with adequate and trained staff, within its defined area of service, which is easily accessible to all its subscribers.
  - maintain record containing all complaints and submit to the Authority as and when required.
  - redress complaints within 48 hours or two working days.
  - ensure that its representative(s) carry proper identification documents along with a photograph for the purpose of maintenance/repair.

(d) Fine for Violation

- In case of a violation of Standards, a fine of Rs.10,000/- may be imposed by PEMRA.
- In case of continuous violation of these Standards, proceeding against the Cable Operator may be initiated under Section 33 of the PEMRA Ordinance 2002.

Cable TV Licenses

The growth in clientele reflects itself as much in the expansion of physical infrastructure of cable and television networks as in their increased generation of

revenues. Figure-4.1 shows the number of Cable TV licenses for the years 2002-03 to 2008-09.

Figure-4.1
Cable TV Licenses, Pakistan, 2002-03 to 2008-09

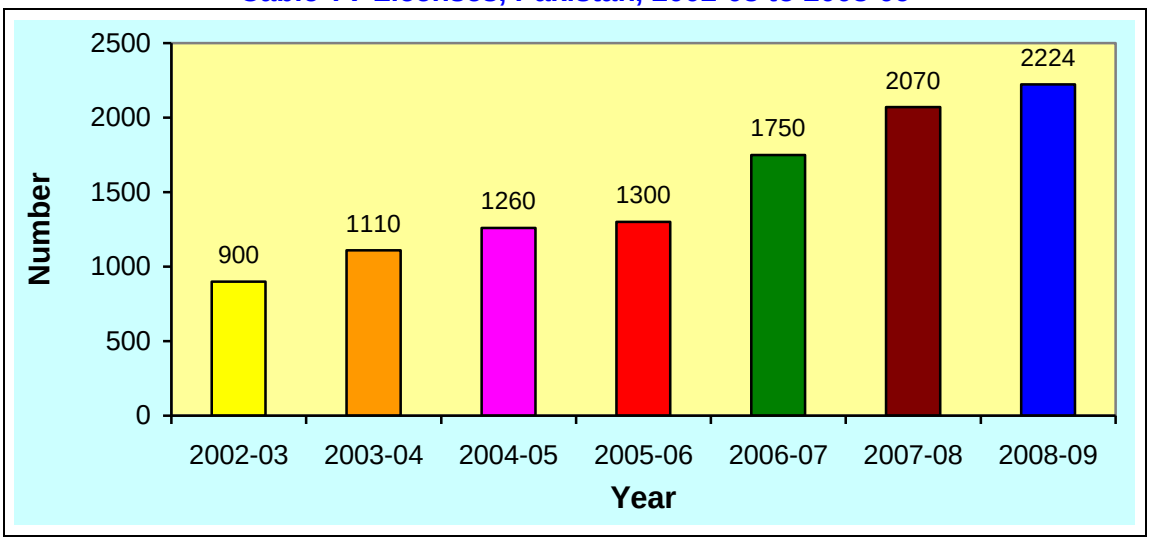
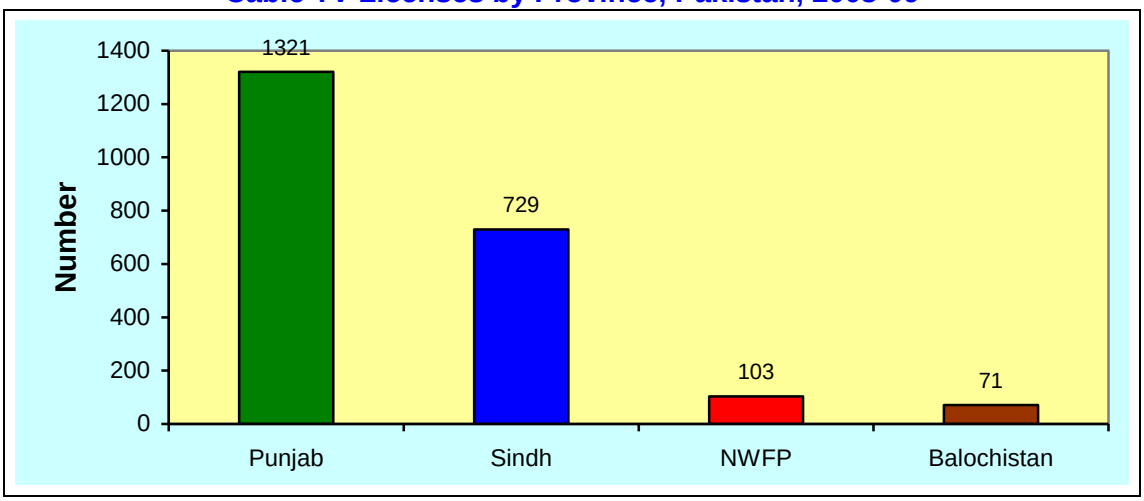


Figure-4.2 indicates the provincial distribution of Cable TV licenses held during the year 2008-09.

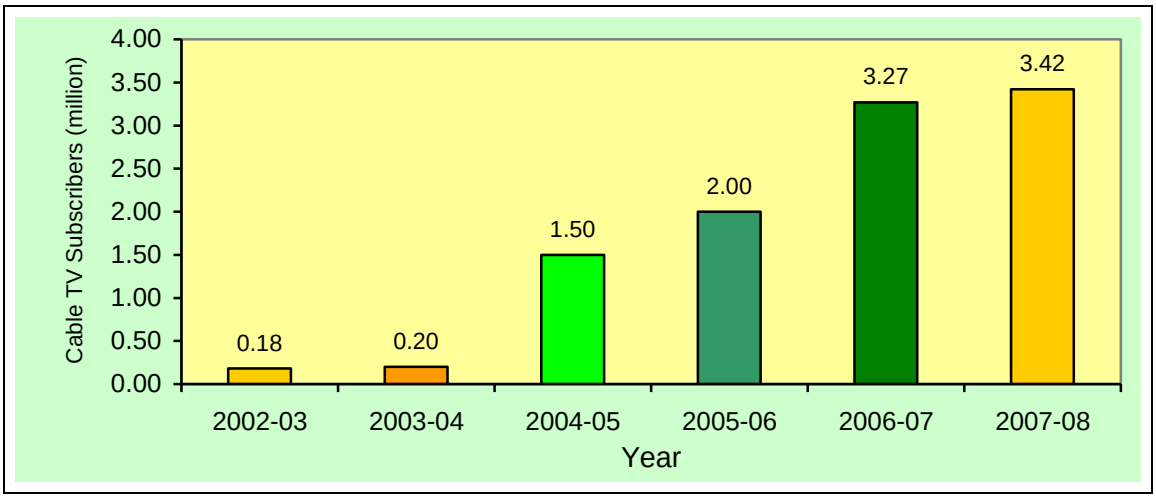
Figure-4.2
Cable TV Licenses by Province, Pakistan, 2008-09



(ii) Cable TV Subscribers Growth

The cable television remained the fastest growing field in the national electronic media domain. By paying a subscription fee, a family can have access to a bouquet of national and international channels of choice for entertainment, information and education. The number of subscribers across Pakistan has increased sharply since in 2004-05 and touched the level of 3.42 million in 2007-08 as shown in Figure-4.3.

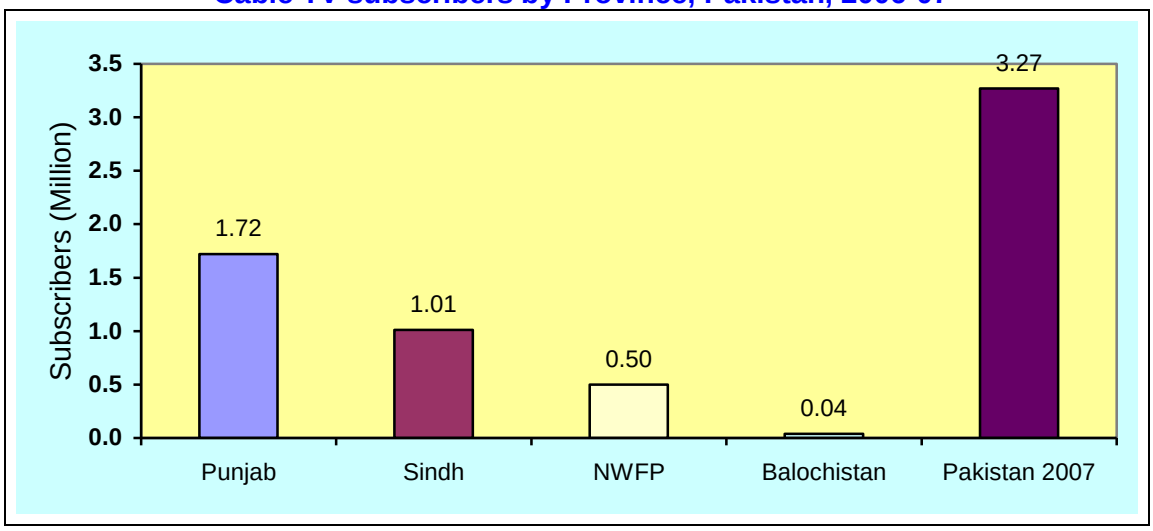
Figure-4.3
Cable TV Subscribers, Pakistan, 2002-03 to 2007-08



Source: PEMRA

It is further observed from the Figure-4.4 that majority of the Cable TV subscribers belong to Punjab and Sindh.

Figure-4.4
Cable TV subscribers by Province, Pakistan, 2006-07



4.2 Satellite Television

Satellite TV is the provision of television services through satellite. The range of a Satellite TV Station depends upon foot print or coverage area of the Satellite being used. The Satellite TV channel is received wherever the foot print or beam of the Satellite is received. C-Band and KU-Band is used for Satellite TV. This service is important especially for areas where television services are not possible to provide through cable or terrestrial means. Seventy one Satellite TV

licenses have been issued till now and 63 applications are pending as shown in Table-4.5 and Figure-4.5.

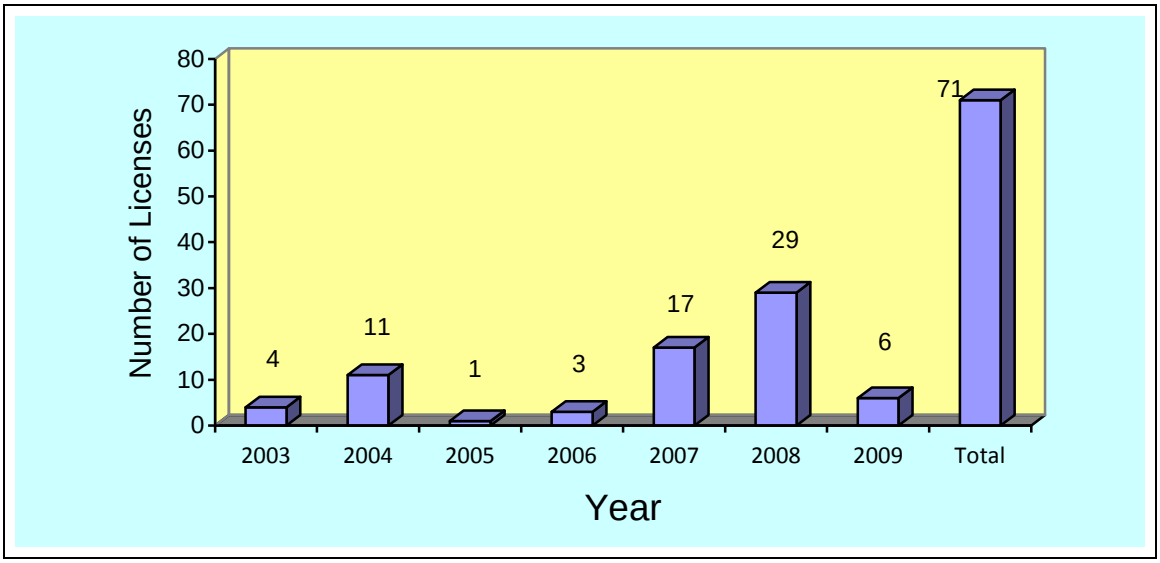
Table-4.5
Satellite TV licenses, Pakistan, 2003-2009

	2003	2004	2005	2006	2007	2008	2009	Total
Licenses Issued	4	11	1	3	17	29	6	71

Source: PEMRA

Figure-4.5

Satellite TV licenses, Pakistan, 2003-2009



4.3 Multi-Channel Multi-Point Distribution System (MMDS)

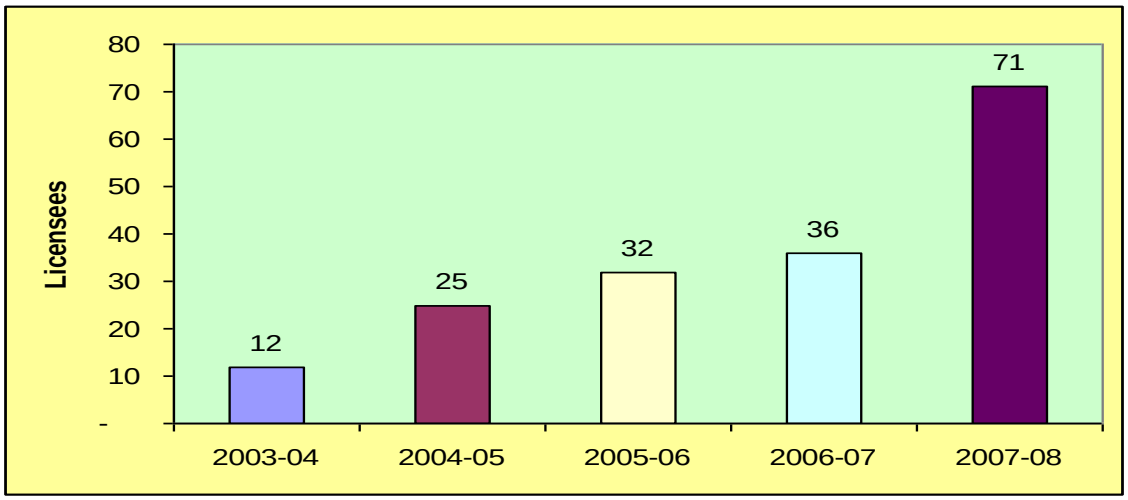
MMDS is also known as Wireless Cable TV. This wireless technology made its debut in Pakistan in 1996 as analogue Multi-channel Multi-point Distribution System (MMDS). Initially, it started off with 10 TV channels. Later, digital technology was introduced to distribute more than 50 channels. Karachi, Lahore, Islamabad, Sahiwal and Okara are covered at present. By March 2009, the network had reached to subscriber base of 237,700. However, 6 licenses have further been issued for establishing MMDS stations in the country.

4.4 Television Channels

The Cable TV operators distribute Pakistani as well as foreign TV channels through their networks. The foreign channels have to obtain landing rights (with a fee of Rs.0.3 million to Rs.5.0 million depending on the type of channel) from PEMRA to access viewers through these Cable TV or MMDS operators. Pakistani channels have to obtain a licence (with a fee of Rs.2.5 millions) to uplink and broadcast programs through satellites. Terrestrial broadcasting is being carried out only by Pakistan Television Corporation Limited which is owned by the Government and has the status of National Broadcaster.

Currently there are 56 private channels and three in public sector are operating out of 71 licensees. Twelve out of 71 channels are non operational. These channels are provided in the form of a bouquet the size of which depends on subscription charges offered by the service provider. Further 13 companies hold landing rights and operating 21 channels whereas 14 applications for Landing rights permission are pending. Figure-4.6 shows the private licensees and channels being operated by them by the year end 2008.

Figure-4.6
Licenses issued for TV Channels, Pakistan, 2003-04 to 2007-08



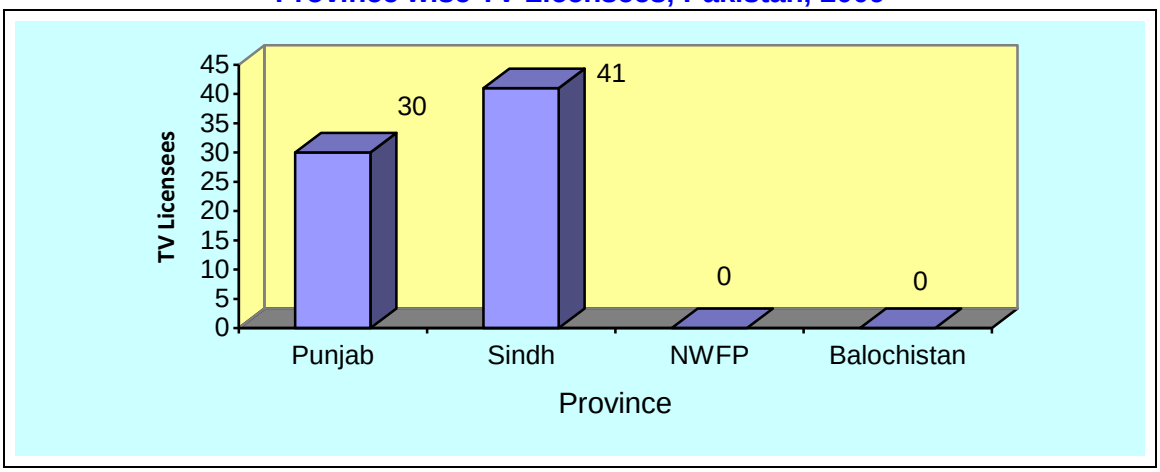
Source: PEMRA

Province wise position of the TV channels is given in Table-4.6 and Figure-4.7.

Table-4.6
Province wise TV Licensees, Pakistan, 2007-08

	Punjab	Sindh	NWFP	Balochistan	Total
Channels	30	41	0	0	71

Figure-4.7
Province wise TV Licensees, Pakistan, 2009

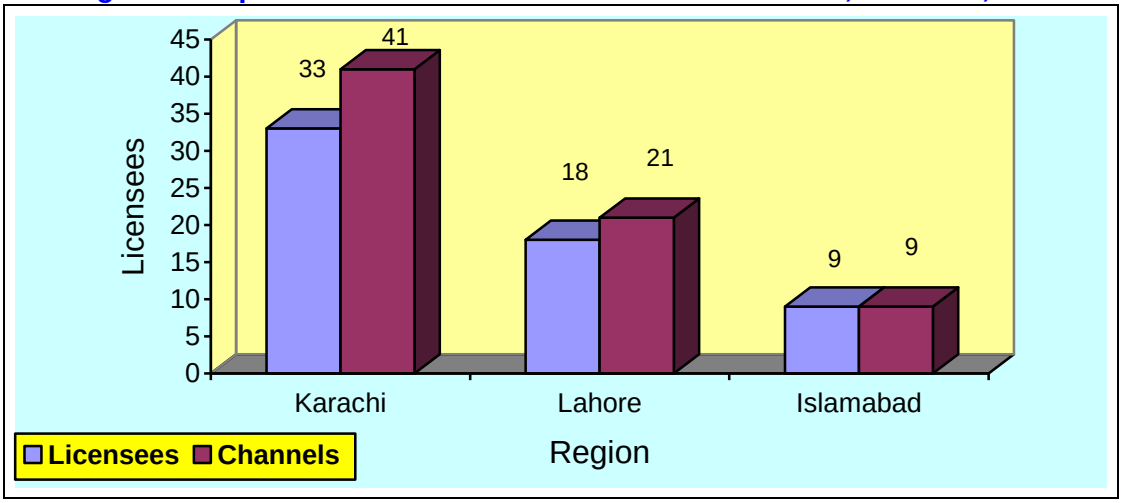


Region wise position of the Satellite TV licensees and channels is given in Table-4.7 and Figure 4.8:

Table-4.7
Region wise position of Satellite TV Licensees, Pakistan, 2009

	Karachi	Lahore	Islamabad
Licensees	33	18	9
Channels	41	21	9

Figure-4.8
Region wise position of Satellite TV Licensees/Channels, Pakistan, 2009



The Channels may be categorized as shown in Table-4.8.

Table-4.8
Category of Channels, Pakistan, 2009

Category	Channels for Landing Rights	Satellite TV Channels
Religious		1
News	5	16
Education and Information	4	6
Entertainment	11	44
Kids Entertainment	1	1
Sports	-	3
Total	21	71

Uplinking permission for one year has been given to two parties in 2008 and to one party till February 2009 whereas such permission for 30 days has been given to 45 parties in 2008 and to 3 parties till February 2009.

The public channels are run by Pakistan Television (PTV). PTV has installed 83 boosters in all the four provinces as shown in the Table-4.9 to provide free to air TV transmission. Besides this, PTV is presently operating three TV channels.

Table-4.9
PTV Boosters, Pakistan, 2009

Province	PTV-1	PTV-2	Total
Punjab	11	11	22
Sindh	7	3	10
NWFP &FATA	20	10	30
Balochistan	15	6	21
Pakistan	53	30	83

Source: PTV

4.5 Direct To Home (DTH)

In addition to Cable Television network, private ventures in FM broadcasting, satellite & terrestrial television, cable television, MMDS, DTH and other emerging technologies are being encouraged. A number of people are using dish antennas privately to receive TV transmission through satellite but it is considered illegal as no license is issued by PEMRA for such reception. DTH service enables customers to receive TV programs directly from satellites, using high power Ku band transponders on a small dish antenna, employing their own terminal using integrated receiver, decoder and remote control, all this without the need of a cable operator. DTH is a centralized and controlled broadcasting using satellite technologies with enough provisions for manoeuvrability and manipulation as to who will receive what contents and when. DTH can offer nearly 200 channels, better quality of picture and sound and a host of specialized and targeted services. The choices include regional, national and international programs and scope for simultaneous access with the rest of world. At the moment two DTH licenses stand issued.

4.6 Internet Protocol TV (IPTV) Channel Distribution Services

Internet Protocol Television is a new method of delivering and viewing television programming using an IP network and high speed broadband access technology. It provides triple play service on a single medium i.e. TV, internet and telephone.

IPTV is a system where a digital television service is delivered using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. A general definition of IPTV is television content that, instead of being delivered through traditional broadcast and cable formats, is received by the viewer through the technologies used for computer networks.

For residential users, IPTV is often provided in conjunction with Video on Demand and may be bundled with Internet services such as Web access and VoIP. The commercial bundling of IPTV, VoIP and Internet access is referred to as "Triple Play" service (when these three are offered with mobility, the service is referred to as "Quadruple Play"). IPTV is typically supplied by a service provider

using a closed network infrastructure. At the moment PEMRA has issued two licenses for providing this service.

4.7 Mobile TV

Mobile TV is the latest technology where the TV services are streamed on to the mobile or hand-held devices. Mobile TV is going to get more and more prevalent over the next couple of years. There is lot of momentum in the area, even if there are a few commercial products so far. Presently two licenses stand issued by PEMRA for providing this service.

4.8 TV Sets

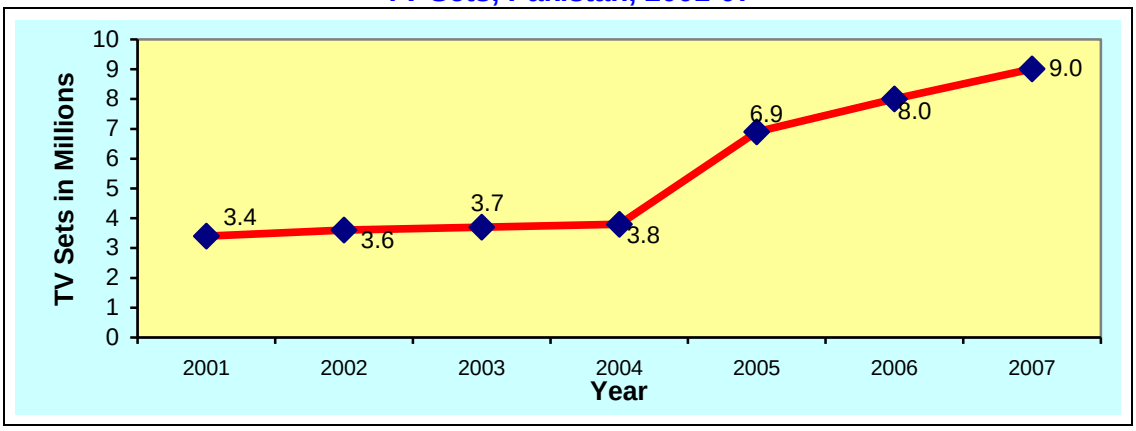
The measure of electronic media penetration in a country is its number of TV sets. In Pakistan 9 Million TV Sets were being used in 2006-07 (Figure 4.9). This figure had been calculated by Pakistan Television Corporation (PTV) on the basis of TV license fee collected through electricity bills. Taking average growth rate as 20 percent per annum, estimated TV sets in Pakistan should be about 10.8 million. Province-wise number of this standard media outlet is presented in Figure-4.9.

Table-4.10
TV Sets, Pakistan, 2001-07

(million)

	2001	2002	2003	2004	2005	2006	2007
Pakistan	3.4	3.6	3.7	3.8	6.9	8.0	9.0

Figure-4.9
TV Sets, Pakistan, 2001-07



Source: Statistics Division (GoP) Year Book-2008

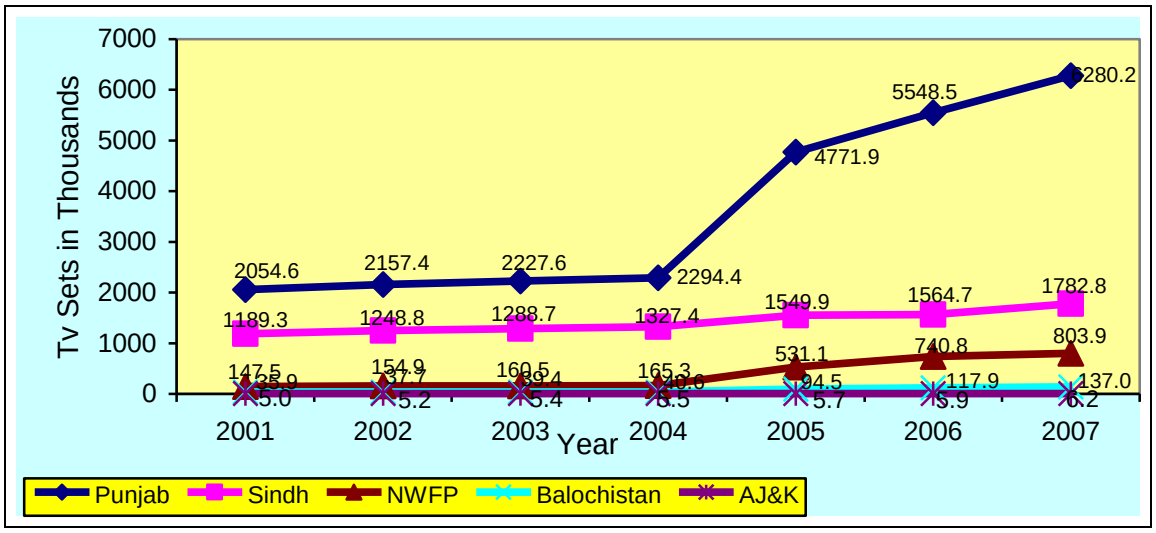
Province wise status of TV Sets in Pakistan (in thousands) is given in Table-4.11 and Figure-4.10.

Table 4.11
Province wise TV sets, Pakistan, 2001-07

	2001	2002	2003	2004	2005	2006	2007
Punjab	2054.6	2157.4	2227.6	2294.4	4771.9	5548.5	6280.2
Sindh	1189.3	1248.8	1288.7	1327.4	1549.9	1564.7	1782.8
NWFP	147.5	154.9	160.5	165.3	531.1	740.8	803.9
Balochistan	35.9	37.7	39.4	40.6	94.5	117.9	137.0

AJ&K	5.0	5.2	5.4	5.5	5.7	5.9	6.2

Figure 4.10
Province wise TV sets, Pakistan, 2001-07



Source: PTV

Box-4.1
TV Manufacturers

Haier is a Chinese company. It has established a facility to manufacture TV sets in Pakistan. As part of business survey they were approached to give detail of their production and sales. According to them total market size for TV sets in Pakistan is 650,000/annum. Pakistan Electronic Manufacturer Association has on the other hand given a figure of 950,000 to One million numbers TV sets produced per year. They have invested Rs. 1.0 billion as capital in the Pakistan enterprise and currently employ 550 personnel. Last year 700 employees were working for them but due to economic slow down staff strength has decreased. The difficulties indicated by them include high rate of excise duty, load shedding and general slow down in economy.

M/s Haier also responded to question about affordability of their customer in purchase of TV sets. According to data 50 percent customers paid price between Rs. 5001 to Rs. 10000 for TV sets. Those who purchased TV set costing from Rs.10001 to Rs.20000 were reported as 35 percent. Those who spent Rs. 20001 to Rs. 40,000 for a TV set are 12 percent while TV set costing above Rs. 100001 were purchased by only one percent.

Box-4.2
Retail Sellers

Retail sellers of TV sets report that about 35 percent customer purchase TV sets costing less than Rs.5000/-. The local made TV set in this price is not available in the market as manufacturers indicate price of small size TV to be between Rs.5000/- and Rs.10000/-. Minimum price for local TV sets reported in FDG by retailer as Rs.6500/-. In research it has been revealed that colour TV set of 14" size is available in the market in the price range of Rs.3500/- to Rs.5000/-. Such TV sets are a sort of refurbished gadgets based on use of second hand Cathode Ray Tubes (CRT). Like non-branded Personal Computers (PC) such TV sets are sold in the market under fictitious brand names. Low income groups of the society are happy to be able to posses such a TV set. Availability of TV sets at this price has played a big role in increasing TV viewership in the country. In forecasting viewership, number of such TV sets to be extent of 35 percent of regular branded TV sets has been taken into account.

Box-4.3
TV Devices

Television (TV) is a widely used for telecommunication medium for transmitting and receiving moving images, either monochromatic ("black and white") or color. It is normally accompanied by sound. Television is used in relation to either as television set, or for television programming or television transmission. The word television is derived from Latin and Greek roots, meaning "far sight". All modern television systems rely on optical and electronic technologies. The television is used in homes, business premises or in institutions as a source of access primarily about current affairs, entertainment and news programmes. A standard television set comprises of multiple internal electronic circuits, including those for tuning and decoding broadcast signals. A television system may use different technical standards such as digital television (DTV) and high-definition television (HDTV). Three dimensional (3D) TV sets are currently in the cutting edge of the technology but still in experimental stage.

Satellite Television and Terrestrial Television are major sources for broadcasting television programs. Production houses produce programs and either uplink the same for distribution or beam it for direct reception by the viewers. Programs are distributed through Cable TV, MMDS, DTH, Broadband (IPTV) and 3G/ 4G services.

For display, conventional TV sets, LCD/ Digital TV sets and Plasma TVs are commonly used. A display device which lacks a tuner is properly called as a monitor, rather than a television set. Computer monitors are also used by using a video card designed for this purpose. Mobile phone sets are used to view television wherever such services are available. In Pakistan, Two cellular mobile operators have been licensed to provide this service. Programs from the satellite television can be made available at any time and any place while traveling but this

service is not yet available in Pakistan.

Video cassettes, laserdiscs, DVDs and now Blue-ray discs, have resulted in the frequent use of television set for viewing recorded as well as broadcast material.

Video Phone is another device which may be used for displaying televised pictures or moving images.

Amateur television (HAM TV or ATV) is also used for experimentation, pleasure and public service events by amateur radio operators.

In future, conventional TV set shall continue to be used for individual and collective viewing. The facilities in mobile handsets and computer terminal including laptops may become handy for individual viewing. Expanding WiMax and equivalent emerging technologies will provide ready connectivity without aerials. As direct broadcast satellite (DBS) become more powerful (strong ERP) and palm held TV receivers become popular with younger generation, Nano technologies are fast becoming viable for adoption on a mass scale. In future, rolled off TV receiver will be designed which can be unfolded when needed. It seems that technological developments shall permit increased access to TV viewing regardless of the location and time.

4.9 FM Radio Broadcasting

(i) Licensing Regime

FM (Frequency Modulation) Radio broadcasting uses 88 -108 MHz band and provides high quality Audio programs. Its area of coverage is generally 40 - 50 kms. For FM Radio license, the applicant must be a company or a body corporate, incorporated in Pakistan and should not be a firm or company the majority of whose shares are owned or controlled by foreign national or whose management control is vested in foreign national or companies. The paid-up capital of the applicant company for a single (R3 Category) FM station shall be Rs.3.0 million with enhancement by Rs.1.5 million for each additional station. Further, the applicant should not be a recipient of funds from a foreign government, organization or individual;

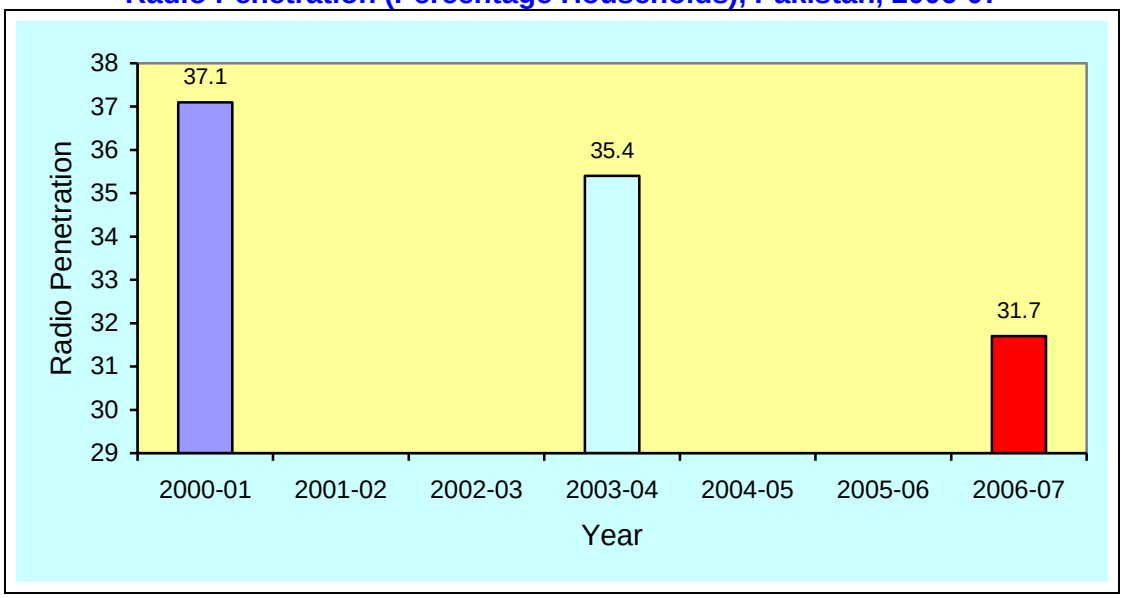
In case of more than one application for FM Radio license for the advertised city / location, licenses are issued through open bidding process. The duration of License is 10 years and fee (base price) varies from rupees 0.1 million for general category to 10 million for International Scale Station. Under General Terms and Conditions a licensee shall not commit an act that is likely to harm the legitimate interests of other licensees and ensure that the broadcast installations or the cable lines do not become a security or traffic hazard, a nuisance for the life and property of the public or opposed to the environmental standards. The licensee shall be responsible to obtain necessary permission from the municipal authorities or utility companies and abide by their terms and conditions and other relevant regulations while installing the broadcasting equipment. The licensee shall broadcast public service programs, which may be provided by the Authority or by

the Government and shall abide by the quality standards as set by the Authority and ensure that the Radio broadcasts provided by him are not interrupted suddenly except due to the circumstances beyond his control. The licensee shall not stop, cease or suspend the broadcasts without the prior approval of the Authority and without a clear notice of at least thirty days to the target viewers, listeners or subscribers. The licensee shall also ensure that the copyright obligations with respect to the programs being aired are fulfilled. PEMRA has not started the licensing for Short Wave and Medium Wave radio broadcast stations which are operated by Pakistan Broadcasting Corporation.

(ii) Radio Penetration Rate

According to a survey by NIPS (National Institute of Population Studies) DRAFT Pakistan 2006-2007 regarding household durable goods, it has been found that 32% households have a radio set as shown in the Figure-4.11.

Figure-4.11
Radio Penetration (Percentage Households), Pakistan, 2006-07



Source: National Institute of Population Studies (NIPS)

This shows slight decrease in the radio sets possession in households. It could be under-reported as now there are pocket radios, radio in the cellular handsets and radios in stereo sets that might have not been counted. Another important factor is the radios in the vehicles which have not been accounted for. There are over 2.0 million radio sets in the vehicles. In fact in four wheel vehicles it is almost a standard fitting now. Modern cellular mobile phone handsets also have capability to work as broadcast receiver.

(iii) Radio Licenses and Stations

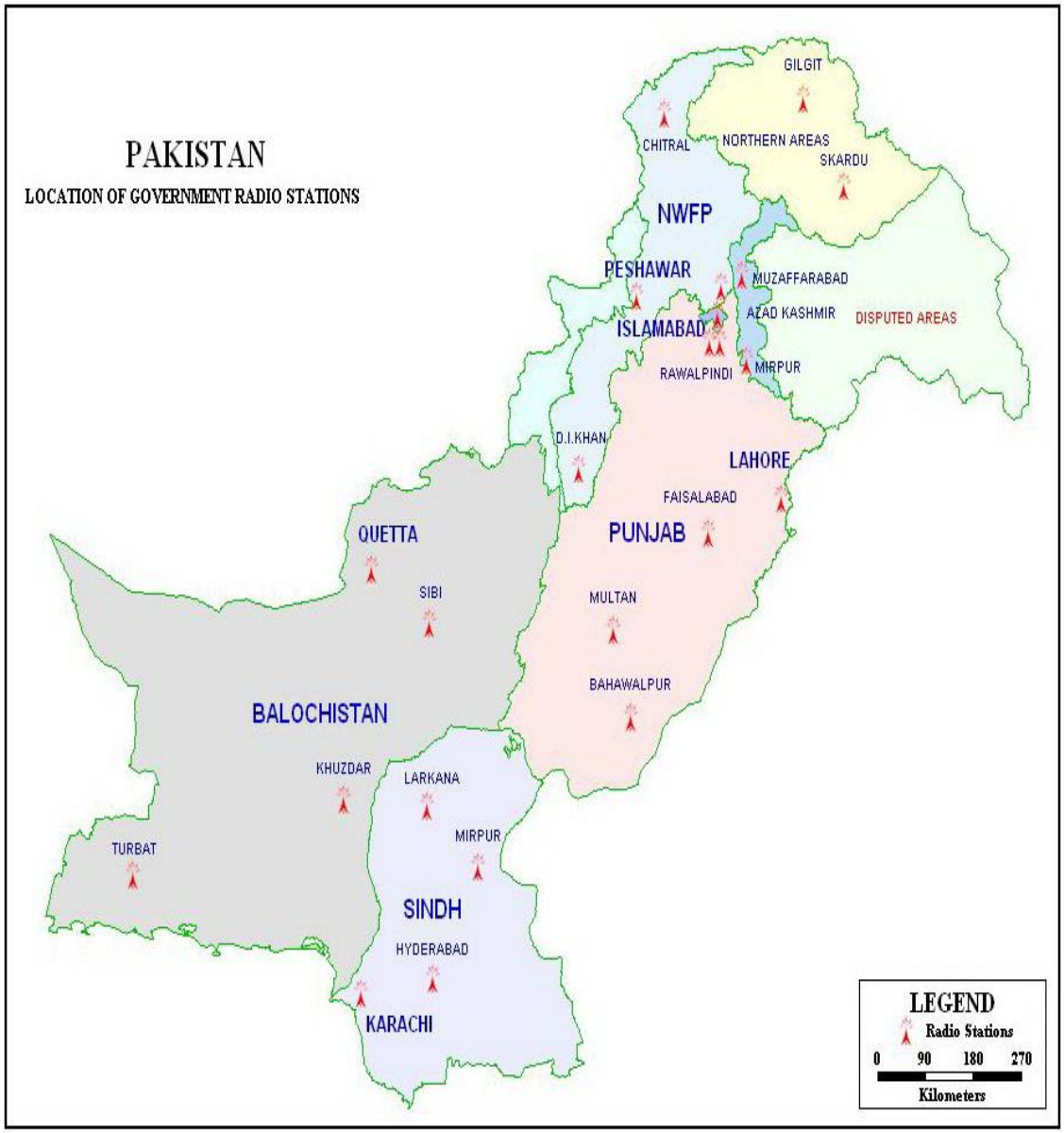
The Government of Pakistan has established 31 FM Radio stations, 7 of them in Punjab, 5 of them in Sindh, 6 in NWFP and 7 in Balochistan, Azad Jammu

& Kashmir has 3, Northern Areas has 2 and Federal Capital Territory has 1 radio stations as shown in Map-4.1.

Map-4.1
Coverage of Government Radio Stations, Pakistan, 2008

Source: Radio Pakistan

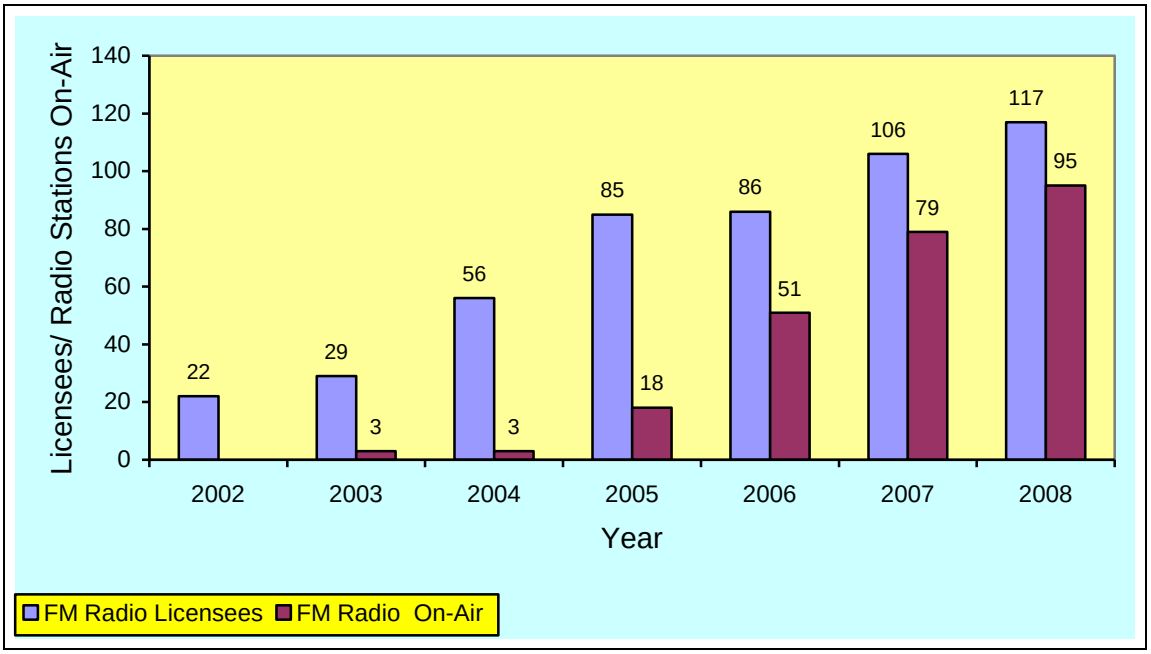
Map-4.2
Location of Government Radio Stations, Pakistan, 2008



Source: TEACH

The Government of Pakistan has also launched a scheme for licenses of private FM Radio stations in the country. The prospective investors and competitors in the field have responded not only for the metropolitan or big cities but also for smaller cities and towns. One hundred seventeen (117) licenses have been issued to private parties as observed at the end of 2008 whereas 95 private FM radio stations have been established and started operation as shown in the Figure-4.12. In addition, the Authority has granted 6 licenses for FM Radio in Azad Kashmir to establish networks in earthquake hit areas on non-commercial basis for relief activities

Figure-4.12
Private FM Radio Licensees/ Radio Stations On-Air, Pakistan, 2008

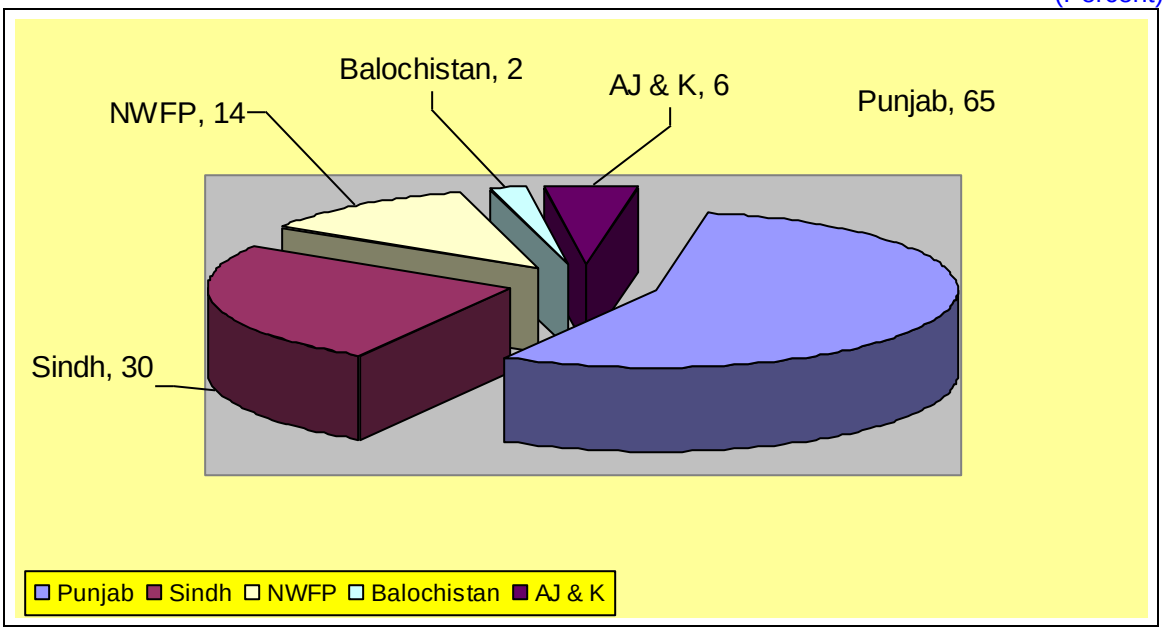


Source: PEMRA

It takes time for a licensee to come on air. The figure for the year 2007-08 includes 14 Campus Licensees whereas 10 licenses stand cancelled. Figure-4.13 and Figure-4.14 present the province wise position of FM licensees and radio stations in operation.

Figure 4.13
Private FM Radio Licensees by Province Pakistan, 2008

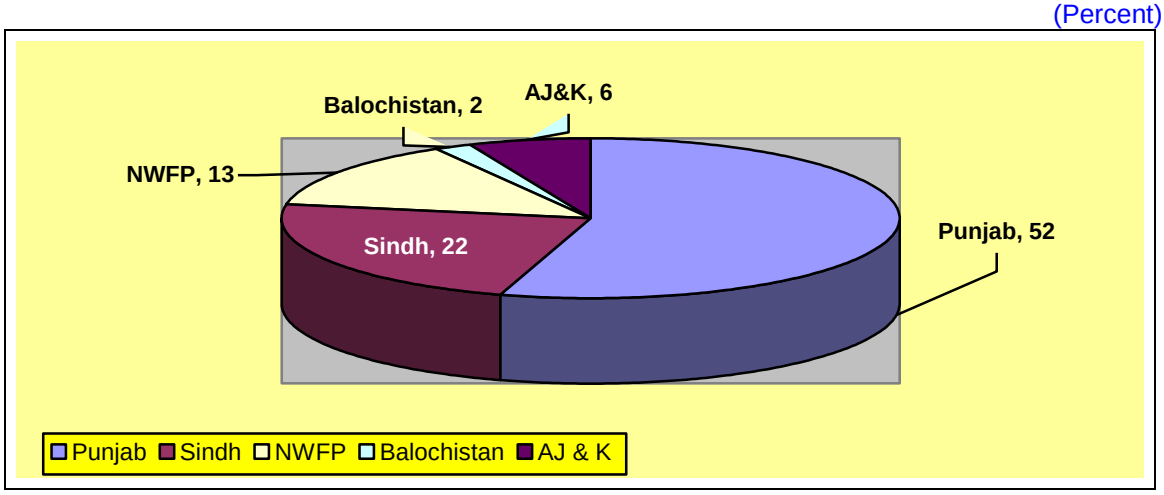
(Percent)



Source: PEMRA

Figure 4.14
Private Operational FM Radio Stations by Province, Pakistan, 2008

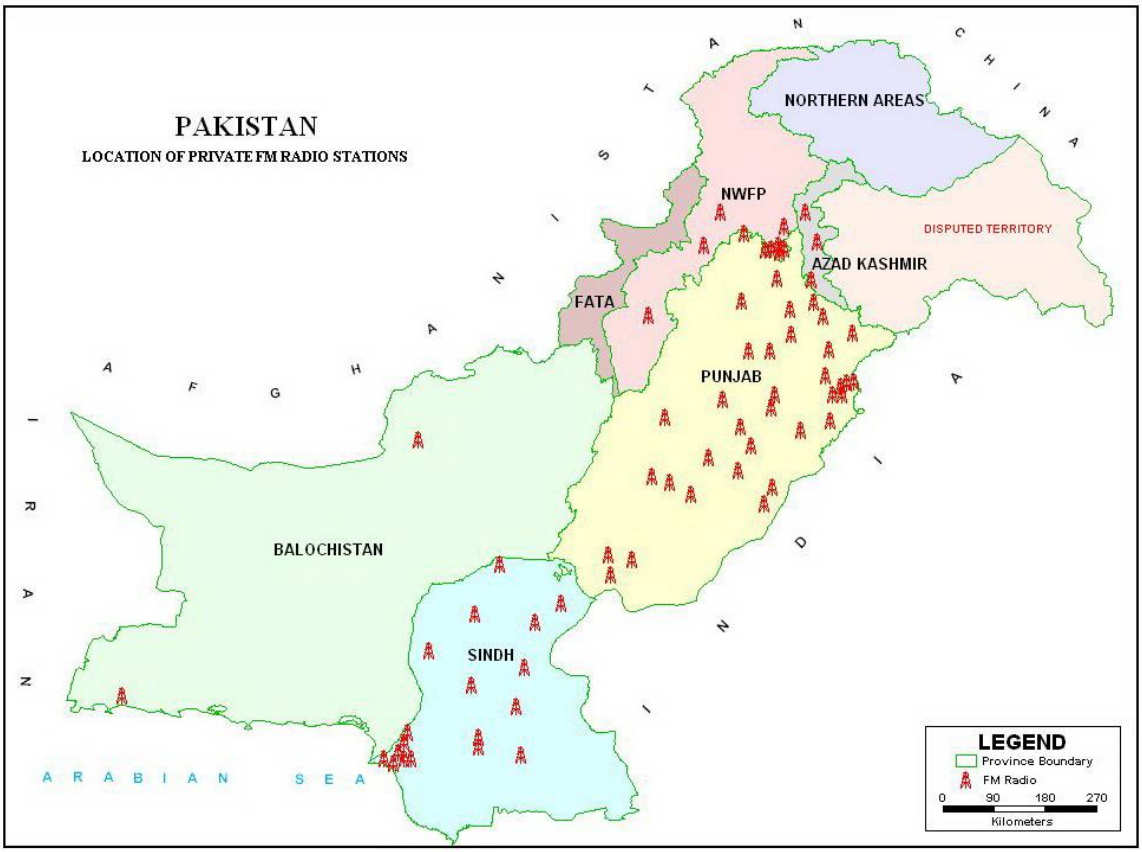
(Percent)



Source: PEMRA

Figures in Figure-4.14 include 14 Campus Licensees operating Radio. Map 4.3 shows the location of private FM radio stations in the year 2006-07.

Map-4.3
Location of Private FM Radio Stations, Pakistan, 2006-07

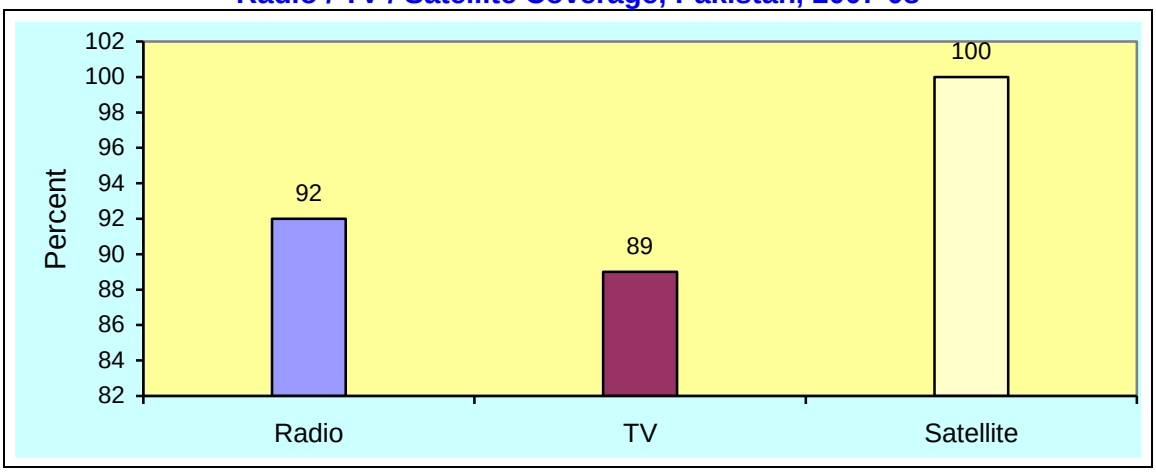


Source: TEACH Research

4.10 Broadcast Coverage

The satellite channels cover entire Pakistan whereas PTV boosters cover 89% of population. Radio coverage is 92% as shown in Figure-4.15.

Figure-4.15
Radio / TV / Satellite Coverage, Pakistan, 2007-08



Source: PEMRA

4.11 Household with Radio / TV sets and Personal Computers

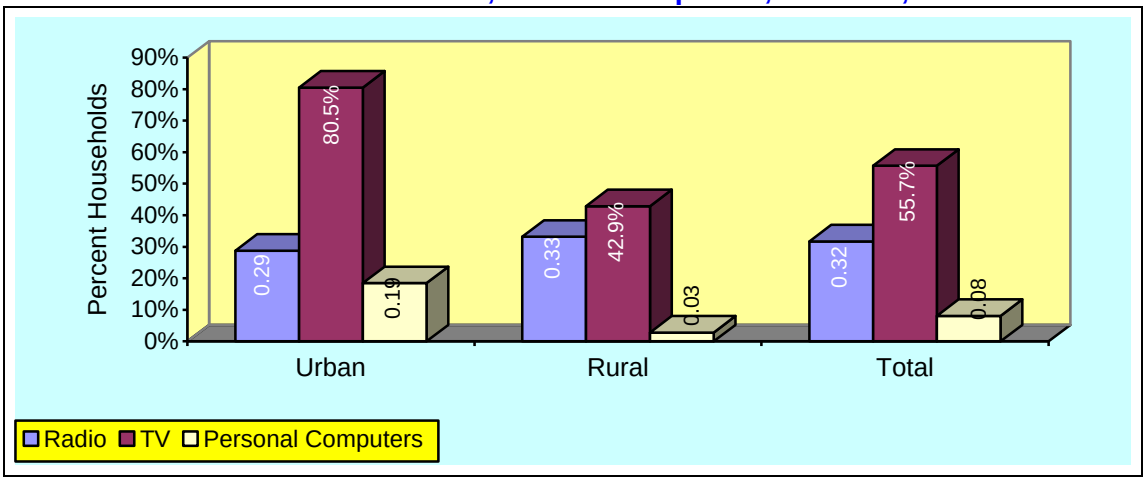
Table-4.12 and Figure 4.16 indicate percent households with Radio TV and personal computers during 2006-07.

Table-4.12
Household with Radio, TV and Computers, Pakistan, 2008

Percent

Item	Urban	Rural	Total
Radio	28.8	33.2	31.7
Television	80.5	42.9	55.7
Personal Computers	18.5	2.8	8.1

Figure 4.16
Households with Radio, TV and Computers, Pakistan, 2008



Source: Household Population and Housing Characteristics Pakistan

4.12 PEMRA Revenue

According to the data released by PEMRA, the revenue generated by various services from the year 2004 to 2008 is presented in Tables-4.13 to 4.20 and Figures-4.17 to 4.24 respectively. A breakdown analysis of the total revenue by services for the year 2008 is presented in the Table 4.23 and the contribution in terms of percentage is presented in the pie Figure-4.27.

Table-4.13
PEMRA Revenue from Cable TV, Pakistan, 2008

(Rupees Million)

	2004	2005	2006	2007	2008
Cable TV	30.2	6.8	17.5	136.2	172.4

Figure-4.17
PEMRA Revenue from Cable TV

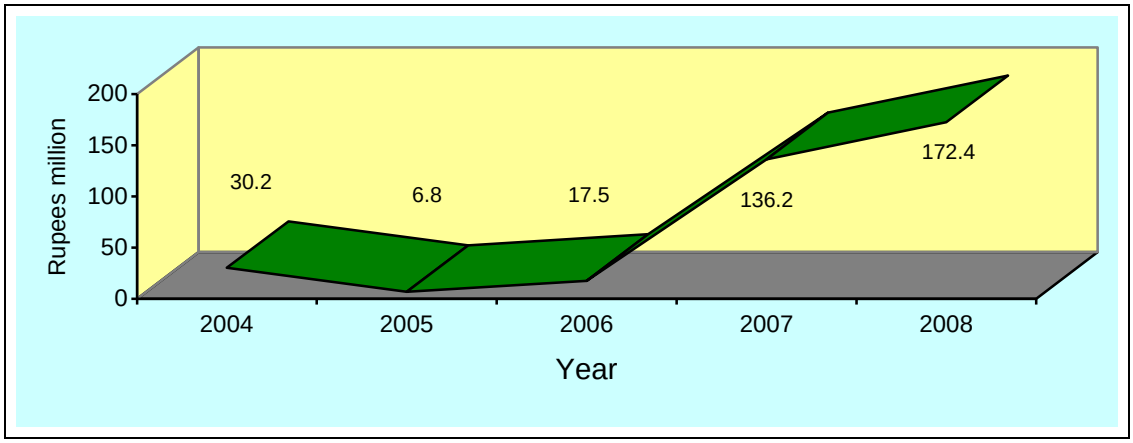


Table-4.14
PEMRA Revenue from FM Radio stations, Pakistan, 2008

(Rupees Million)

	2004	2005	2006	2007	2008
FM Radio	8.6	32.6	27.9	61.7	26.1

Figure 4.18
FM Radio Revenue, Pakistan, 2008

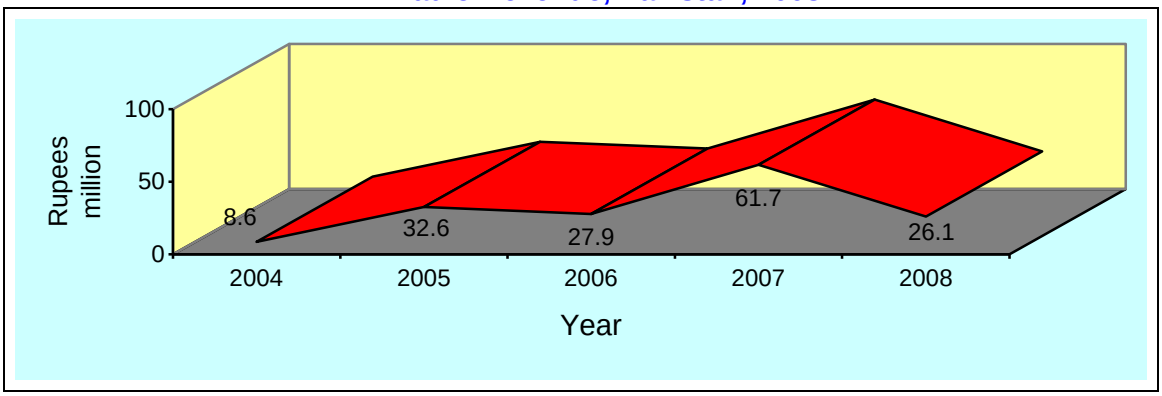


Table 4.15
PEMRA Revenue from MMDS, Pakistan, 2008

(Rupees Million)

	2004	2005	2006	2007	2008
MMDS	4.9	-	1.6	2.9	4.9

Figure-4.19
PEMRA Revenue from MMDS

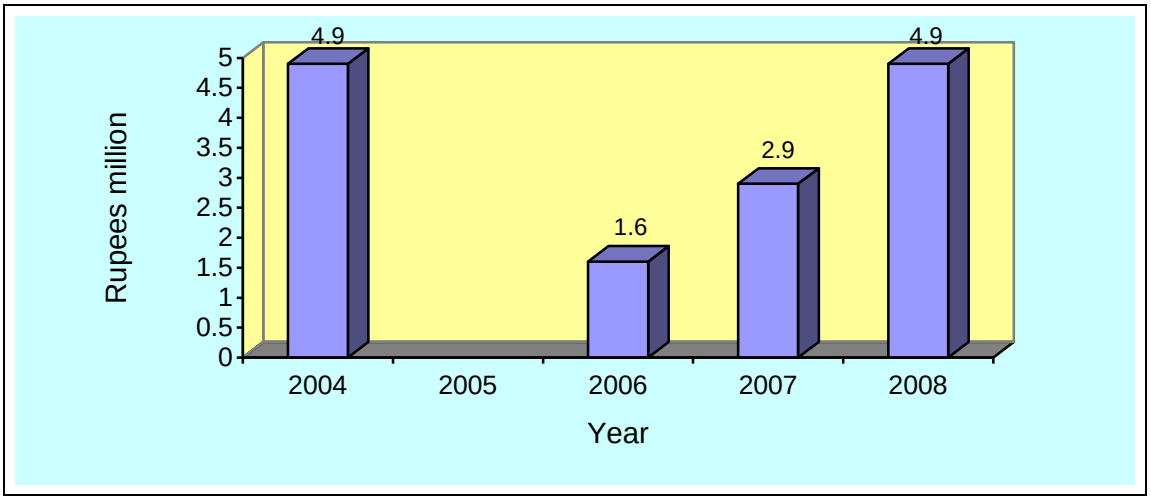


Table 4.16
PEMRA Revenue from Satellite TV channels, Pakistan, 2008

(Rupees Million)

	2004	2005	2006	2007	2008
Satellite TV	9.4	28.7	4.7	37.1	91.5

Figure-4.20
PEMRA Revenue from Satellite TV channels, Pakistan, 2008

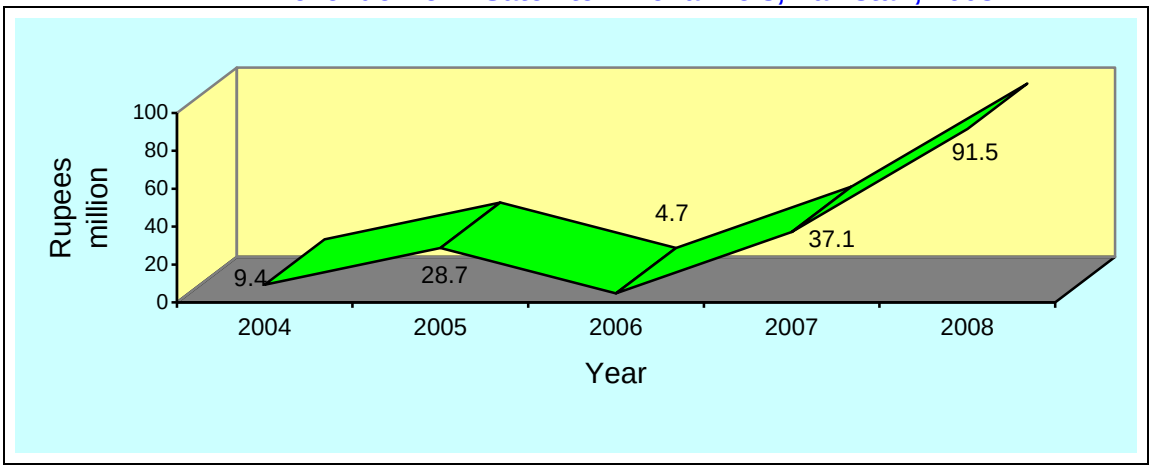


Table-4.17
PEMRA Revenue from Landing Right channels, Pakistan, 2008

(Rupees Million)

	2004	2005	2006	2007	2008
Landing Right channels	1.98	2.07	21.43	45.78	38.1

Figure-4.21
PEMRA Revenue from Landing Right channels, Pakistan, 2004-08

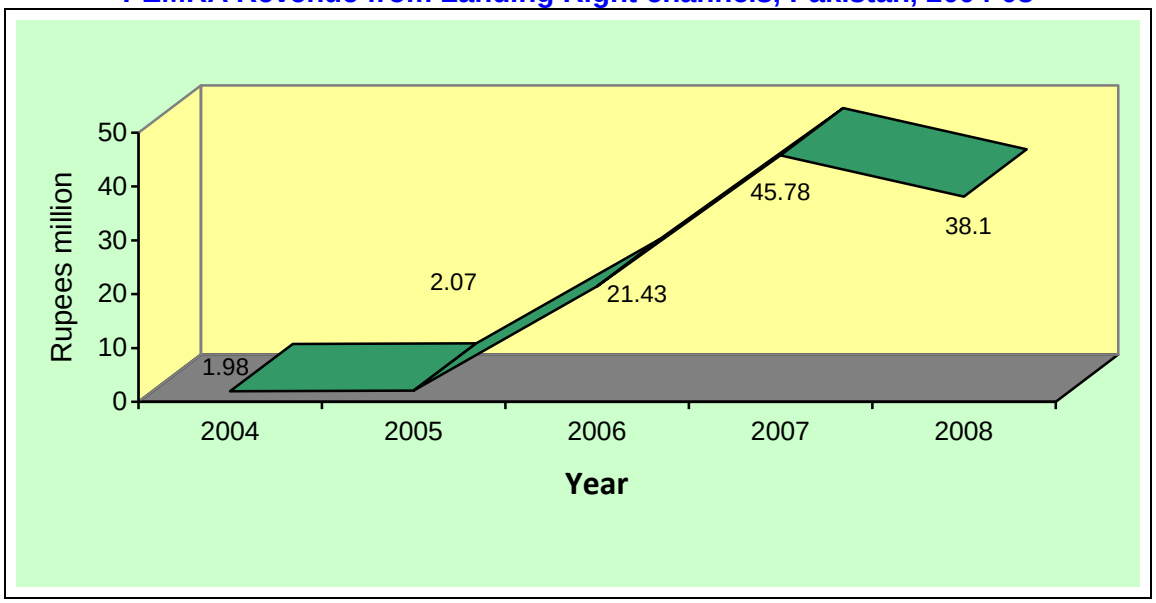


Table-4.18
PEMRA Revenue from other services, Pakistan, 2004-08

(Rupees Million)

	2004	2005	2006	2007	2008
DTH	1.24		61.5	32.81	
Upliking Fee	2.14		25.45	24.82	18.51
Teleport		0.93	14.00		
IPTV				9.94	2.85
Mobile TV					2.11
Terrestrial TV				0.15	
Type Approval	0.88	0.12	0.12		

Figure-4.22
PEMRA Revenue from other services, Pakistan, 2008

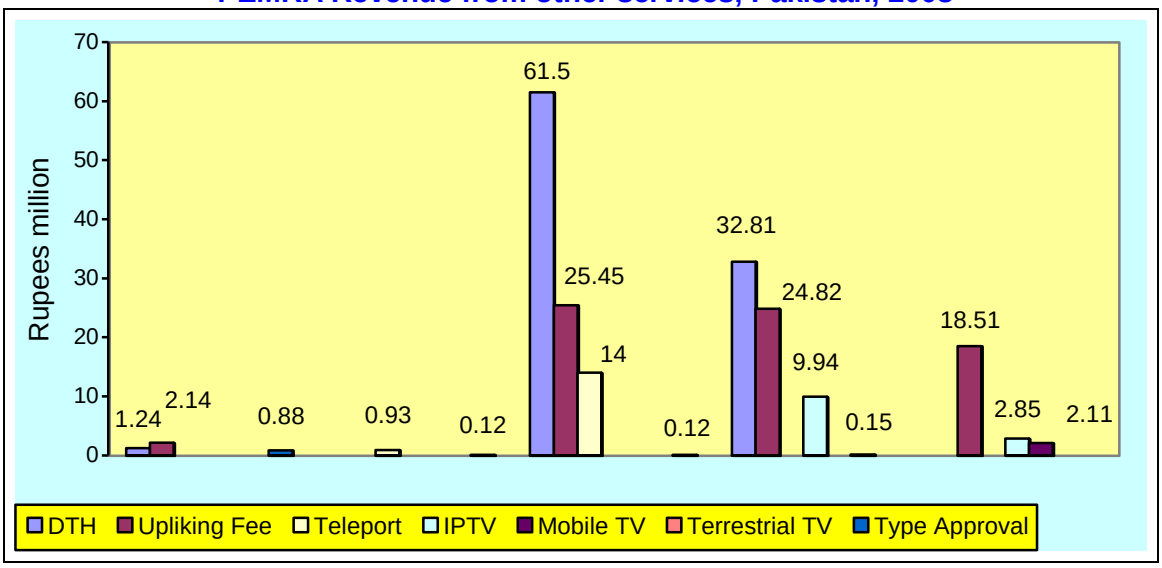


Table-4.19
PEMRA Gross Revenue, Pakistan, 2004-08

(Rupees Million)

	2004	2005	2006	2007	2008
Revenue from Operations	59.36	71.24	174.33	351.34	356.55

Figure-4.23
PEMRA Gross Revenue, Pakistan, 2008

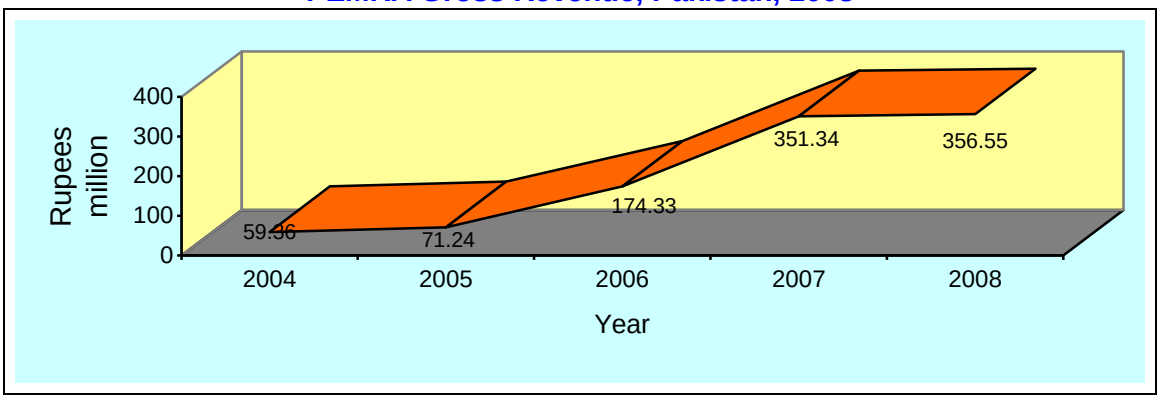


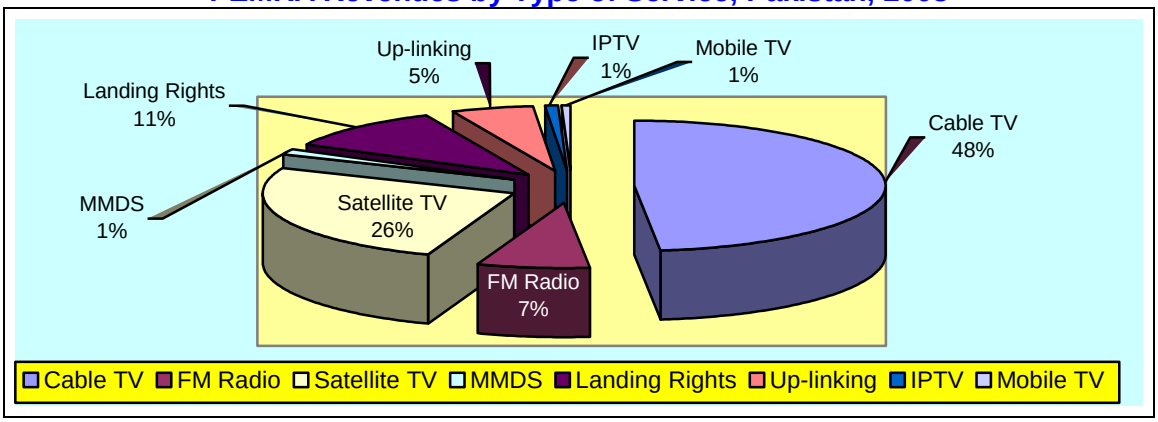
Table-4.20
PEMRA Revenue by Type of Service, Pakistan, 2008

(Rupees Million)

Service	Revenue
Cable TV	172.43
FM Radio	26.09
Satellite TV	91.52
MMDS	4.93
Landing Rights	38.10
Up-linking	18.51
IPTV	2.85
Mobile TV	2.12
Total	356.55

Source: PEMRA

Figure-4.24
PEMRA Revenues by Type of Service, Pakistan, 2008



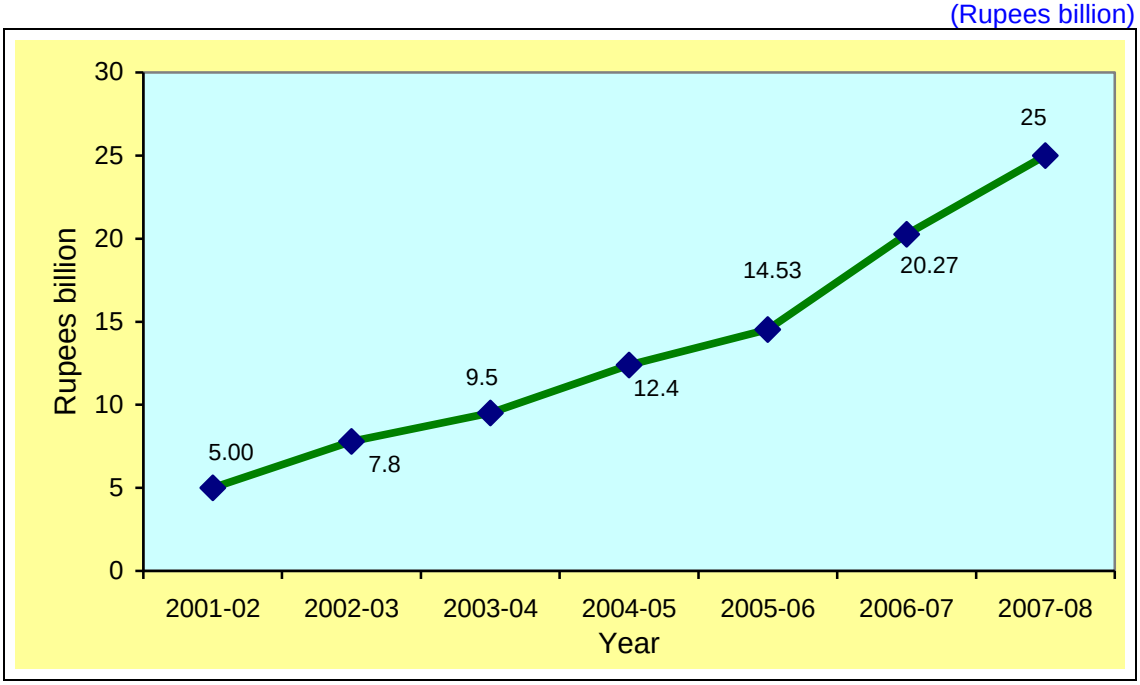
As can be seen from the Figure-4.24, the major part of revenues comes from the Cable TV amounting to Rs.172.3 million constituting around (48 percent) followed by DTH with Rs.88.06 (26 percent) and RFS TV with Rs.35 million(11 percent) and the remaining services contributed less than 10 percent in each case.

4.13 Advertisement Revenue Generated By Electronic Media

According to TEACH research the total media earned advertising revenues amounting to Rs. 14.53 billion in the year 2005-06 and Rs. 20.27 billion by the end of year 2006-07. These earnings show an upward trend while boosting the country's economy. Though increase in revenue to Rs.25 billion for the year 2007-08 is significant. It is expected that with the establishment of new media outlets, the advertisement revenue of the electronic media would be Rs.41.20 billion by 30th June 2015.

Figure-4.25
Total Advertisement Revenue, Pakistan, 2001-02 to 2007-08

(Rupees billion)



Source: Total Media

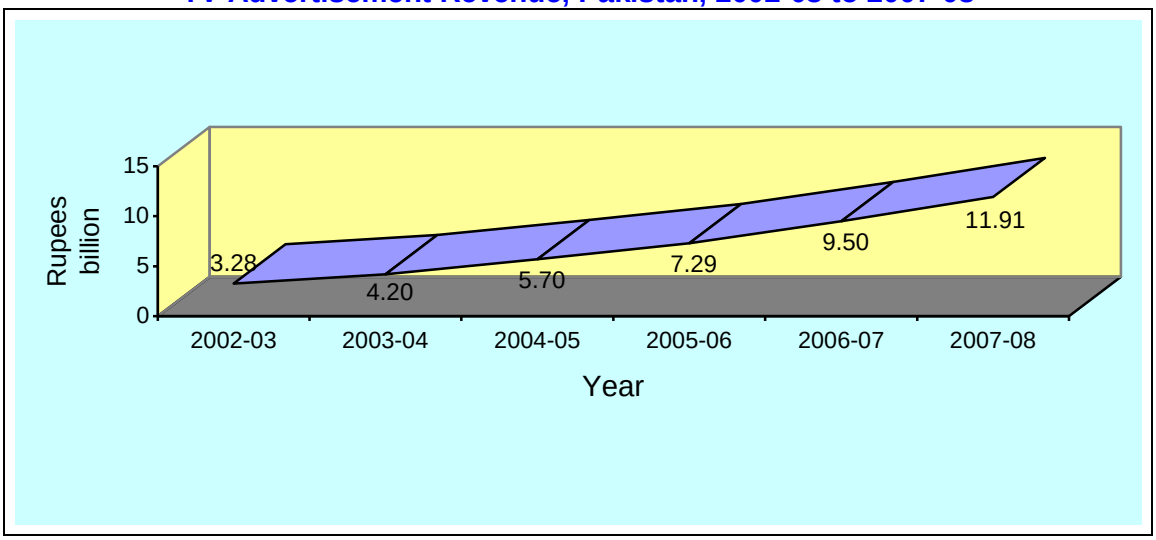
Table-4.21
Satellite TV Advertisement Revenue, Pakistan, 2002-03 to 2007-08

(Rupees billion)

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
TV Advertisement Revenue	3.28	4.20	5.70	7.29	9.50	11.91

Source: Total Media

Figure-4.26
TV Advertisement Revenue, Pakistan, 2002-03 to 2007-08



Source: Total Media

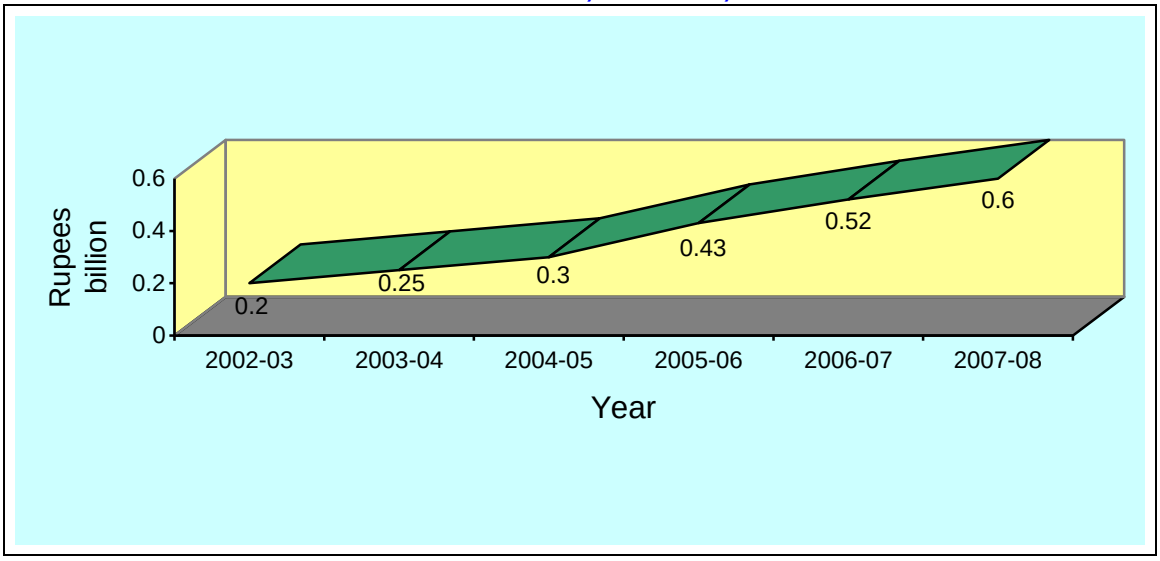
Table-4.22
Radio Advertisement Revenue, Pakistan, 2002-03 to 2007-08

(Rupees billion)

	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Radio Advertisement Revenue	0.20	0.25	0.30	0.43	0.52	0.6

Source: Total Media

Figure-4.27
Radio Advertisement Revenue, Pakistan, 2002-03 to 2007-08



Source: Total Media

Table 4.23
Break up of Advertisement Revenue, Pakistan, 2008

Percent

	TV	Print	Outdoor	Radio	Internet	Direct Market
Advertisement Revenue	47.3	32.4	10.7	2.4	0.5	6.7

Source: Gallup & Aurora

But according to Gallup and Aurora, volume of the Ad Spend is higher. The breakup and growth of Ad Spend according to their estimate is given below in Table-4.24.

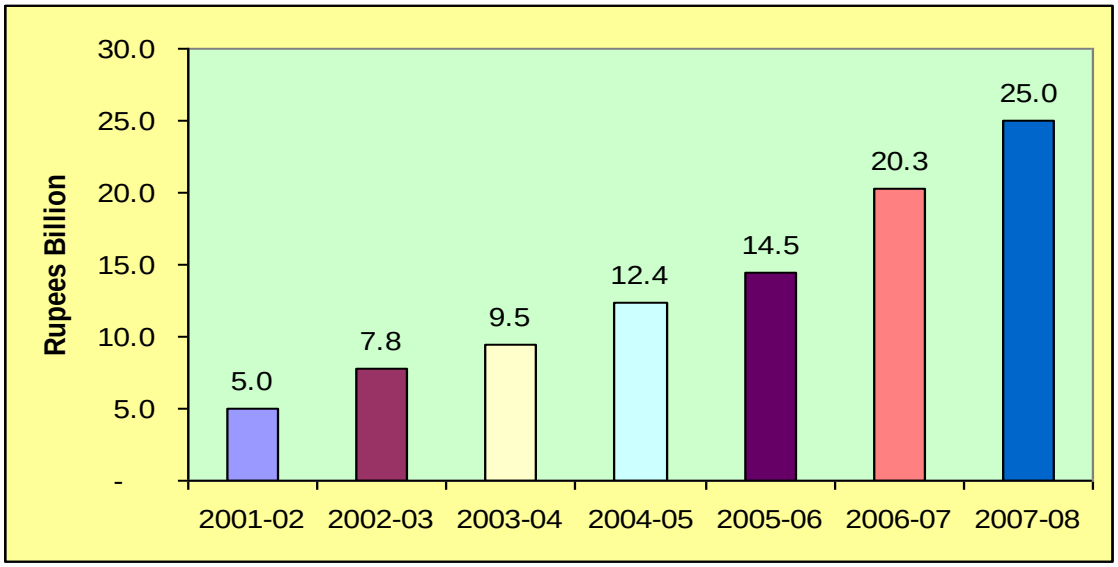
Table-4.24
Year wise Ad Spend Revenue, Pakistan, 2001-02 to 2007-08

Revenue	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Ad Spend (Rupees Billion)	5	7.8	9.5	12.4	14.5	20.3	25

Source-Gallup & Aurora

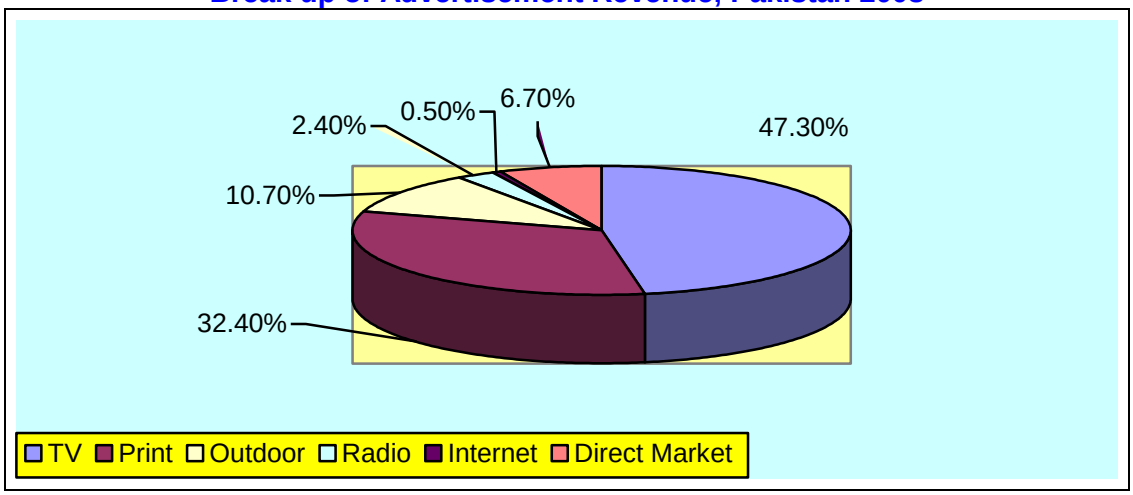
Figure-4.28
Year wise Ad Spend Revenue, Pakistan, 2001-02 to 2007-08

(Rupees Billion)



Source-Gallup & Aurora

Figure-4.29
Break up of Advertisement Revenue, Pakistan 2008



Source: Total Media

Table-4.25
TV and Radio Share in Media Revenue, Pakistan, 2007-08

(Rupees Billion)

Year	Total Media Rupees	TV Share Actual	Radio Share Actual	TV Share Percent	Radio Share Percent
2007-08	25.16	11.9	0.6	47.3	2.4

Source-Gallup & Aurora

TEACH has adopted Gallup and Aurora figures of revenue and shared as working reference.

4.14 Electronic Media Core Indicators at a Glance

The Electronic Media core indicators for the year 2006-07 are given in Table-4.26.

Table-4.26
Electronic Media Core Indicators, Pakistan, 2004-5 to 2006-07

S/N	Indicator	2004-05	2006-07
1	Percentage of Households with Radio Sets	35.3	31.7
2	Radio sets per hundred inhabitants	5.04	4.53
3	Television Receivers per 100 inhabitants	4.41	5.76
4	Television Receivers per 100 households	23	30
5	Cable TV subscribers per 100 inhabitants	1.0	2.1
6	Percentage of Household with TV Sets	31	40
7	Cable TV Subscribers (Millions)	1.50	3.27

Chapter 5

International Scenario

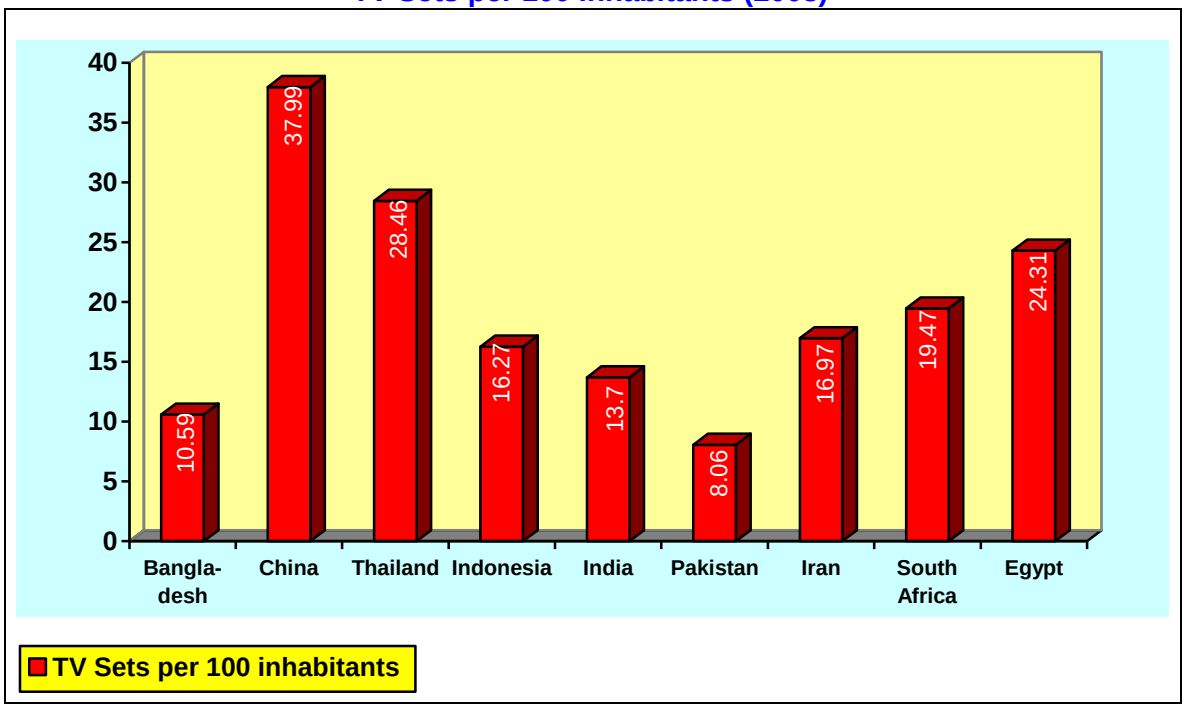
5.1 Indicators

A comparative study of the number of television receivers in various Afro-Asian countries has been carried out. The Figure-5.1 presents this comparison in terms of the number of TV sets per 100 inhabitants.

Table-5.1
TV Sets per 100 Inhabitants

	Bangla-desh 2006	China 2003	Thailand 2003	Indonesia 2003	India 2005	Pakistan 2003	Iran 2003	South Africa 2003	Egypt 2005
TV Sets per 100 inhabitants	10.59	37.99	28.46	16.27	13.70	8.06	16.97	19.47	24.31

Figure-5.1
TV Sets per 100 Inhabitants (2003)



Source: ITU ICT statistics 2008

Households with television are the share of households with a television set. Some countries report only the number of households with a color television set, and therefore the true number may be higher than reported. Table-5.2 and Figure-5.2 present the percent households with TV sets for some important countries.

Table-5.2
TV Households as Percentage of Total Households

Country	Percent Households with Television	Year
Australia	96.28	2003
Bangladesh	22.90	2004
Brazil	90.90	2004
Canada	99.00	2003
China	89.17	2002
Iran	76.58	2002
Indonesia	65.38	2004
India	32.00	2002
Japan	99.00	2004
Pakistan	46.52	2003
Saudi Arabia	98.68	2002
South Africa	59.20	2004
United States	97.84	2002
United Kingdom	97.50	2001

Source: World Development Indicators database

Figure-5.2
Percent Households with Television- Countrywise

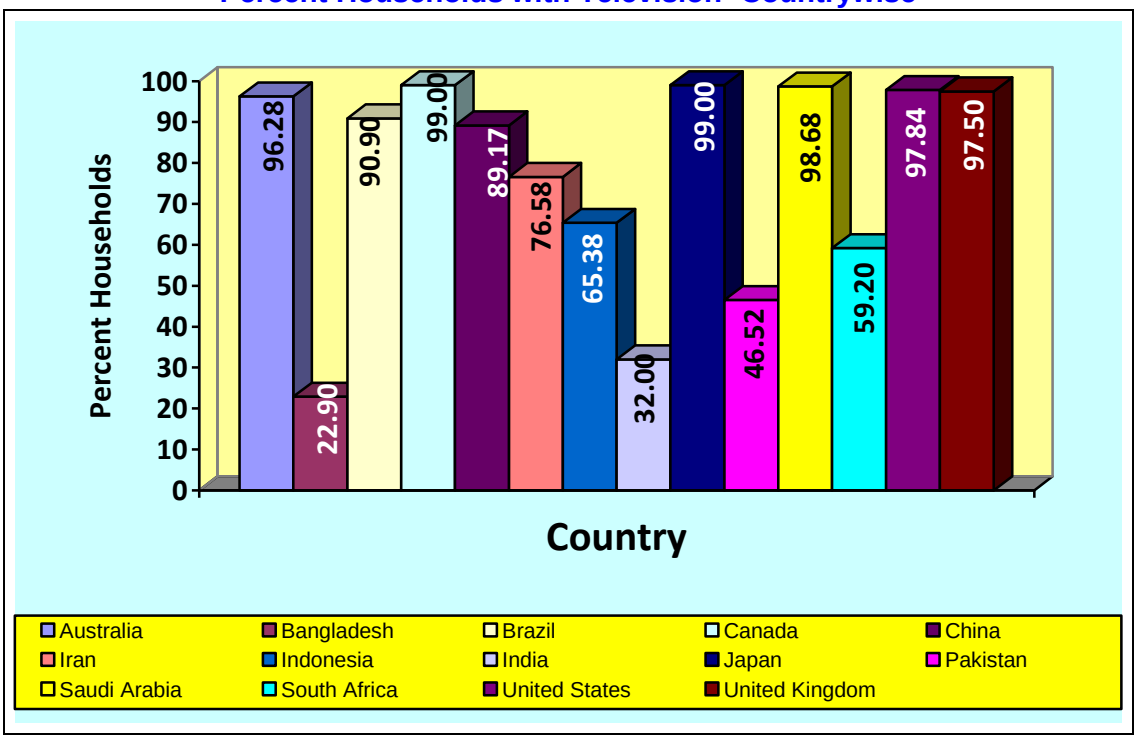


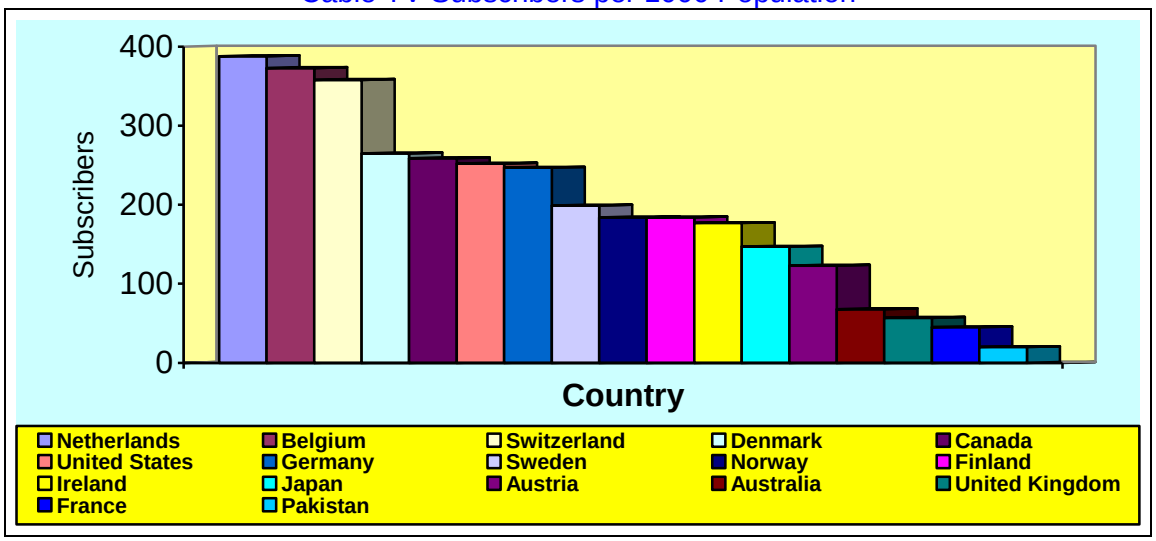
Table-5.3 indicates Cable TV subscribers per 1000 population in various countries of the World. Figure-5.3 is the graphical representation of the same.

Table-5.3
Cable TV subscribers per 1000 population

Country	Cable TV subscribers per 1000 population
Netherlands	388
Belgium	373
Switzerland	358
Denmark	265
Canada	259
United States	252
Germany	247
Sweden	199
Norway	184
Finland	184
Ireland	177
Japan	147
Austria	123
Australia	68
United Kingdom	57
France	45
Pakistan	20

SOURCE: OECD Communications Outlook 2005

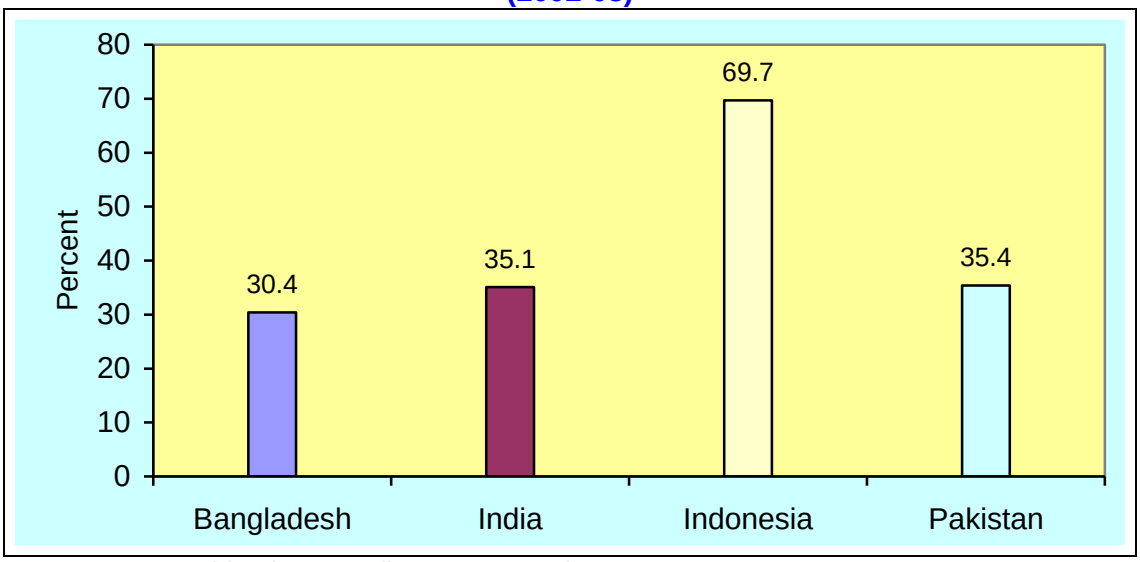
Figure-5.3
Cable TV Subscribers per 1000 Population



SOURCE: OECD Communications Outlook 2005

Figure 5.4 shows the percentage of households with radio sets in the South Asian countries. According to its figures from 2002-03 Pakistan's radio penetration is slightly higher than that of India and Bangladesh. Table-5.4 and Figure-5.5 show the radio sets per 100 inhabitants.

Figure-5.4
Percentage of Households with Radio Sets in Selected South Asian Countries (2002-03)



Source: ITU World Telecom Indicators, November 2005

Table-5.4
Radio Sets per 100 inhabitants

	Bangla-desh 2002	China 1997	Thailand 2000	Indonesia 1997	India 1997	Pakistan 2003	Iran 2002	South Africa 2002	Egypt 1985
Radio Sets per 100 inhabitants	6.37	33.56	22.89	15.64	11.96	7.26	48.95	24.24	24.87

Source: ITU ICT statistics 2008

Figure-5.5
Radio Sets per 100 inhabitants

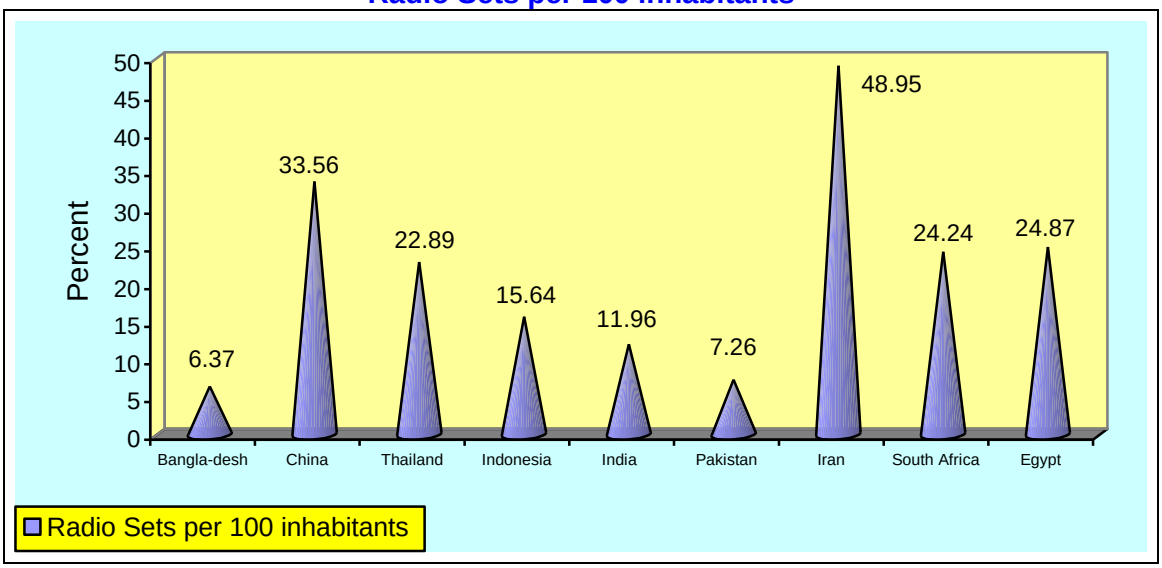


Table-5.5 and Figure 5.6 computers per 100 inhabitants an alternate device to view TV.

Table-5.5
Computers per 100 inhabitants

	Bangladesh 2006	China 2006	Thailand 2005	Indonesia 2006	India 2007	Pakistan 2002	Iran 2006	South Africa 2005	Egypt 2007
Computers per 100 inhabitants	2.42	5.60	6.86	2.0	3.17	0.46	10.53	8.36	4.87

Source: ITU ICT statistics 2008

Figure-5.6
Computers per 100 inhabitants

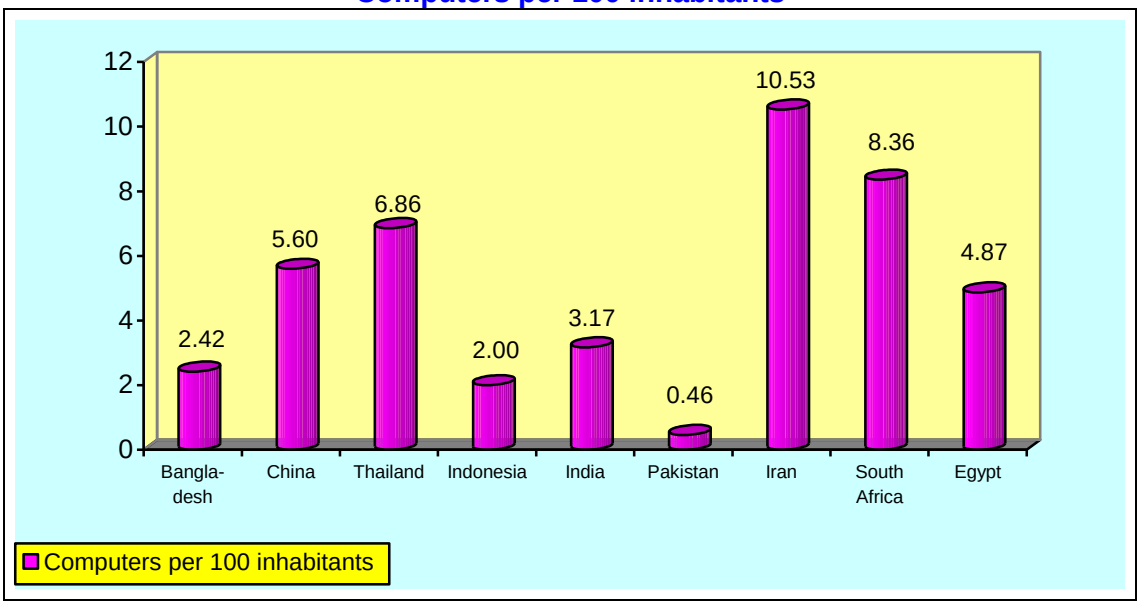


Table-5.6 and Figure-5.7 indicate the Internet users per 100 inhabitants for some Afro-Asian countries. Internet may be used to view TV and listen radio.

Table-5.6
Internet Users per 100 inhabitants

	Bangladesh 2007	China 2007	Thailand 2007	Indonesia 2007	India 2007	Pakistan 2007	Iran 2007	South Africa 2007	Egypt 2007
Internet Users per 100 inhabitants	0.32	22.30	21.00	5.61	6.93	10.68	32.30	8.16	13.95

Source: ITU ICT statistics 2008

Figure-5.7
Internet Users per 100 inhabitants

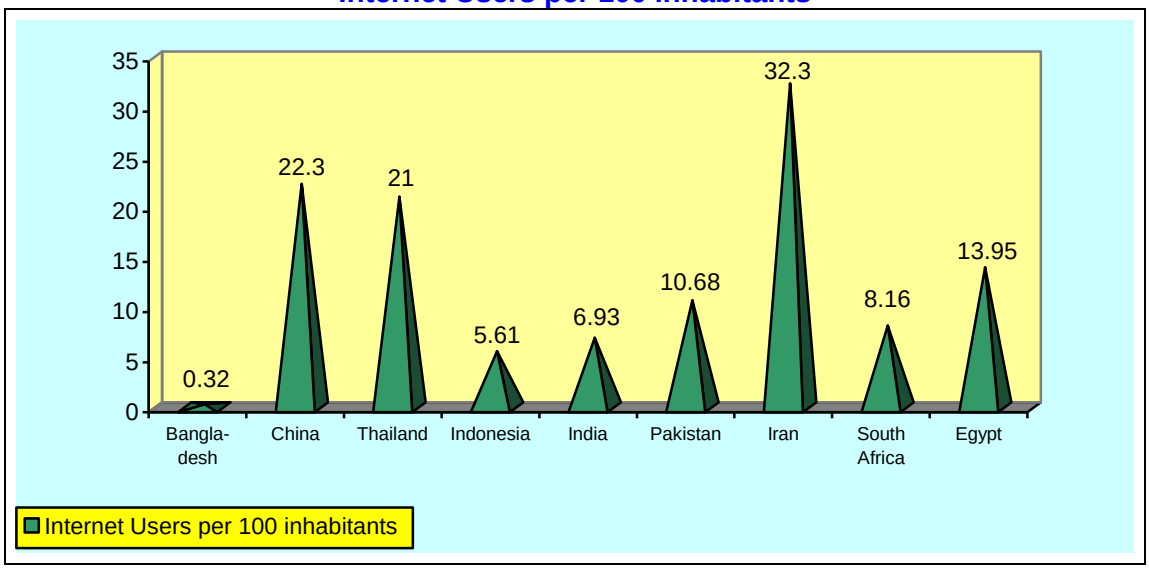
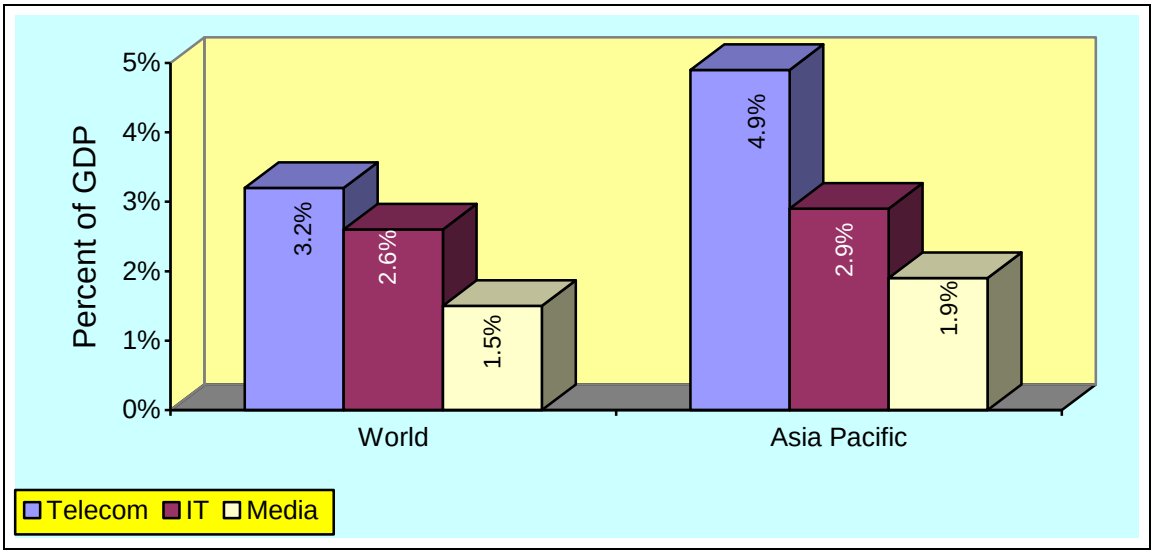


Table-5.7 and Figure-5.8 show the share of media in the world and Asia Pacific markets. Introduction of emerging technologies may result in improving the media share.

Table-5.7
Markets as percent of GDP, 2007

	World	Asia Pacific
Telecom	3.2	4.9
IT	2.6	2.9
Media	1.5	1.9

Figure-5.8
World and Asia Pacific Markets-2007



Source: Mixed Forecasts, Total Telecom Magazine – July/ August 2008

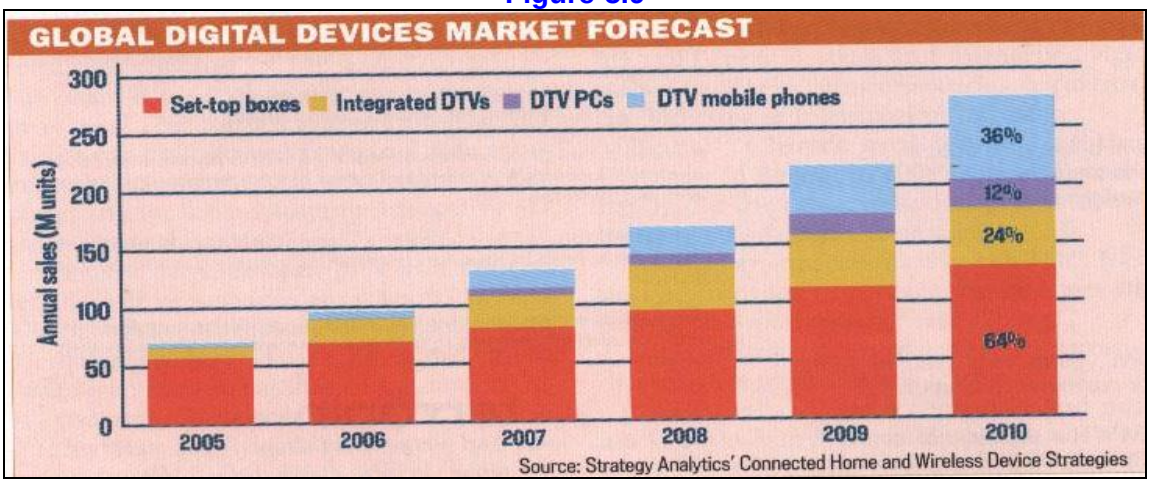
5.2 Direct to Home (DTH)

Regional satellite DTH players in Asia Pacific are posting impressive achievements. Astro in Malaysia has hit 1.6 million subscribers[6] representing more than 30% of Malaysian households. Tata Sky in India has 2 million DTH subscribers and growing. DTH service providers have a unique opportunity to provide coverage in unserved/underserved areas. Satellite broadband can be profitable especially when combined with subsidies from USF. Adopting a MSO (Multisystem operator) platform would give satellite DTH providers a service offering that can compete with terrestrial triple play in more developed markets. DTH players need to offer a competently packaged, easy to use voice, video and data solution to subscribers and yet also maintain the open flexibility to allow consumers to customize the services and content they desire.

5.3 Mobile TV

Analysts believe mobile TV could become a significant money spinner over time as people get hooked on anywhere/ anytime services[7]. Further worldwide service revenues from mobile TV could reach $28 billion by 2010. By then 29% of all new handsets shipped will be TV enabled.

Figure-5.9



The US and Europe are heading in different directions over broadcast mobile services[8]. AT&T Wireless has deployed Qualcomm's Media FLO technology whereas Digital Video Broadcast-Handheld (DVB-H) has gained most traction in Europe. . Both Media FLO and DVB-H are best optimized in the UHF spectrum in use by TV broadcasters.

A report from Informa estimated[9] in earlier 2006 that there will be 210 million mobile TV subscribers worldwide by 2011.

---

[6] Satellite DTH: Addressing IPTV & Triple play Threat–APSCC (Asia Pacific Satellite Communication Council) Newsletter-April 2007

[7] Mobile TV- Ready for prime time? - Total Telecom, July 2005

[8] Mobile TV Services – You go your way…Anne Morris – Total Telecom March 2007

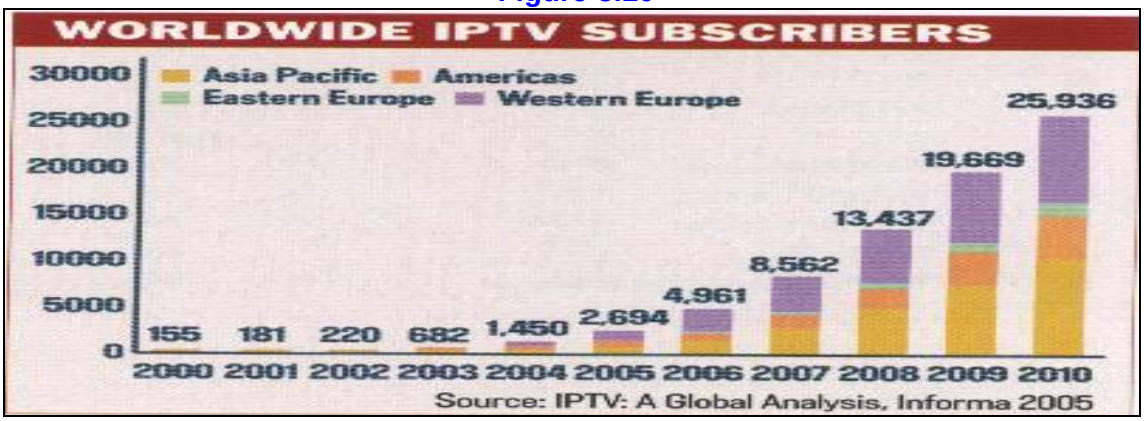
[9] Multimedia Content- Blending in by Lorraine Turner-Total Telecom- October 2006

Mobile TV adoption rates are below 3% in many EC countries[10] three or four years after service launch. Adoption rates are dropping in the UK. The UK has yet to award DVB-H license while in Germany the licensee has failed to meet service requirement. France which has more than 1 million users , has had the greatest success with mobile TV services because of improved performance by dedicating 256 Kbps streams to its 3G service and French operators bundle mobile TV with other mobile and broadband services, giving consumers the impression they are paying little extra. Even so, only 2% of French mobile phone subscribers watch mobile TV. Screen Digest predicts the mobile TV market will be worth €4.4 billion in 2011 in Western Europe, Asia and North America combined, with subscription generating 90% of revenues. To date, only Austria, Finland, France and Germany have adopted legislation for new mobile TV services.

5.4 Internet Protocol Television (IPTV)

The underlying infrastructure to support IPTV is already in place. As the penetration of broadband subscriptions rises, and telecoms operators invest billions in high capacity IP networks, the bandwidth needed for IPTV is becoming available to a larger slice of the market. Further compression techniques have reduced the bandwidth needed for a TV channel to less than 2 megabits per second. In those markets where IPTV offering is both available and differentiated, customers are highly receptive. It is estimated that IPTV in Europe will reach 18.8 million homes by 2013. IPTV in Asia Pacific is forecast to reach 20 million homes by 2009. However, IPTV will only deliver returns if it offers content that attracts consumers. The entrants to IPTV space will face three key challenges. The first is creating, or gaining access to, library of content that will appeal to target market. The second is securing all this with rock-solid security and protection of IP and content rights and the third will be making this content accessible through an IP based platform that is reliable, fast and makes contents easily accessible. Existing and projected Worldwide IPTV subscribers are shown as under:

Figure-5.10



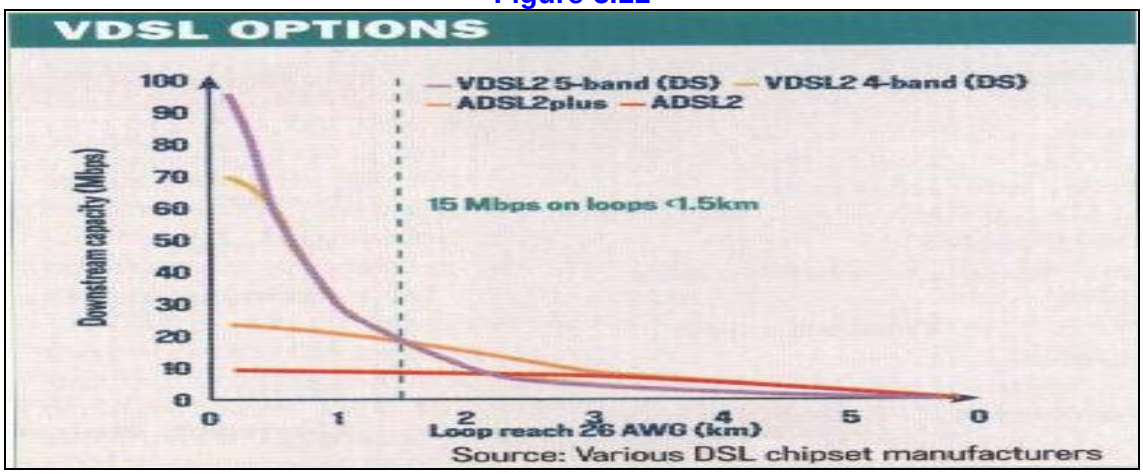
Source: Global 100- business analysis for the global communications industry- November 2005

[10] Mobile TV Services –Lack of Vision by Joanne Taaffe - Total Telecom- January 2009

IPTV also opens the opportunity for new value-added services, including advertising. Web based advertising is growing, while conventional TV advertising is declining. By 2009, 9% of all US linear TV ads are expected to be skipped, representing a potential $6 billion fall in advertising revenue. IPTV provides an opportunity to fill that void and combined with highly accurate statistics about the number of viewers, could allow operators to charge advertisements for well targeted advertisements.

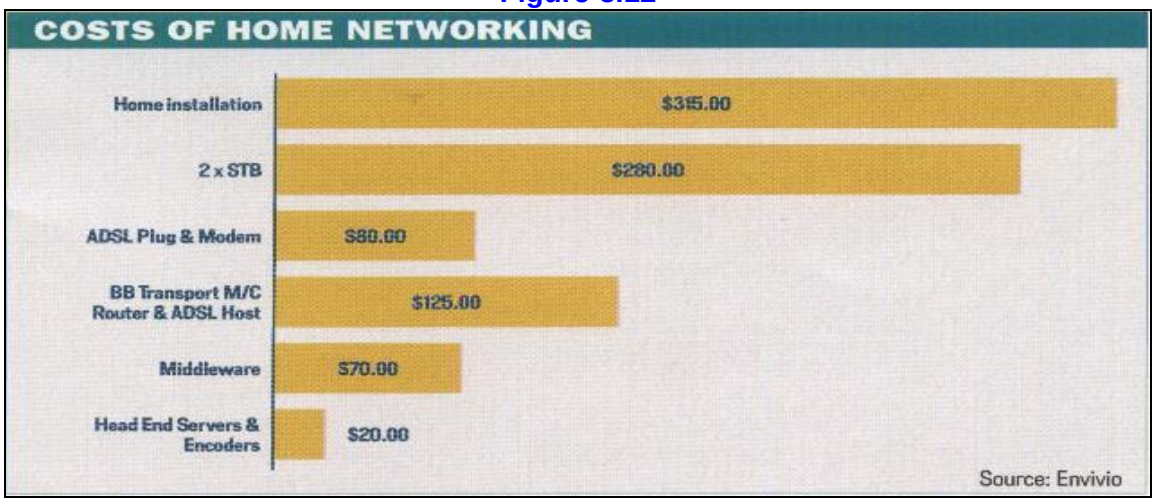
DSL, namely ADSL+2 and VDSL2, is the dominant delivery technology. However, for the delivery of high quality IPTV and other triple play services, operators need IP DSLAM nodes that are able to support more than 20 Mbit/s bandwidth per user concurrently. VDSL options are presented in the Figure-5.11. IPTV is the service that bears the most potential for an increase in ARPU for operators. TDG research estimates that global IPTV revenue will top $17 billion by 2010. Figure shows the costs of home networking for advanced multimedia services without compromising the quality of service.

Figure-5.11



Source: IPTV Services- A special supplement from total telecom- February 2006

Figure-5.12

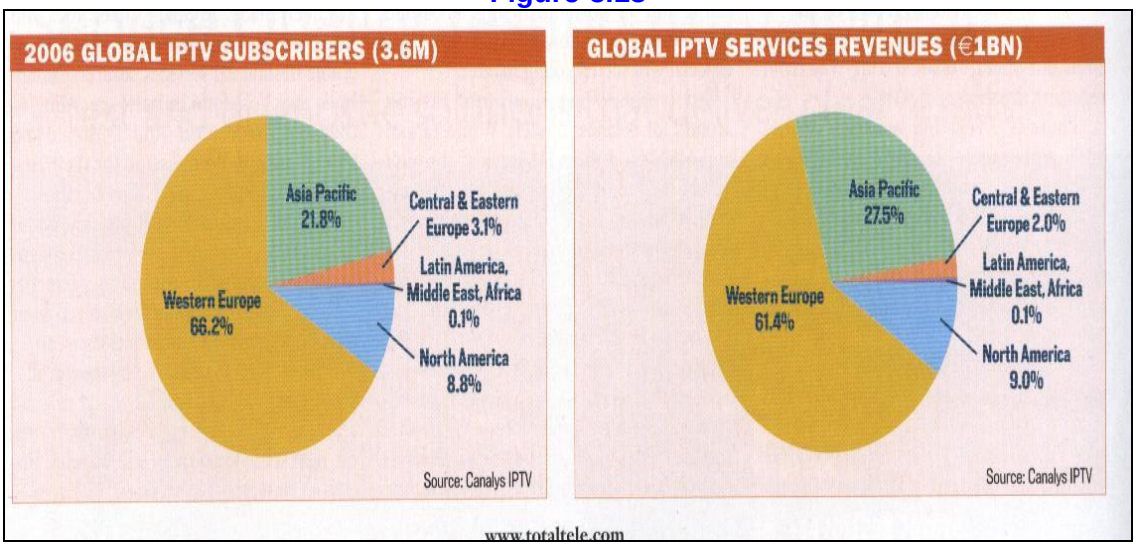


Source: IPTV Services- A special supplement from total telecom- February 2006

It is reported[11] that IPTV subscriber of France Telecom doubled from 200,000 to 429,000 in the last six months of 2006 exceeding all operators in Europe. Growth exploded when France Telecom adopted a triple play price €29.90 matching other services in France. Telefonica, Europe's other IPTV force, reported 304,400 subscriber at the end of September 2006 and the driver for this growth was heavy marketing and low prices. Rising volumes helped push down set-top box prices which was available in less than €50.

A report from market research company Canalys says IPTV subscribers reached 3.6 million globally in 2006 generating almost €1 billion in revenues as shown in Figures below. Analytics estimates IPTV subscribers would be 40.9 million by 2011.

Figure-5.13

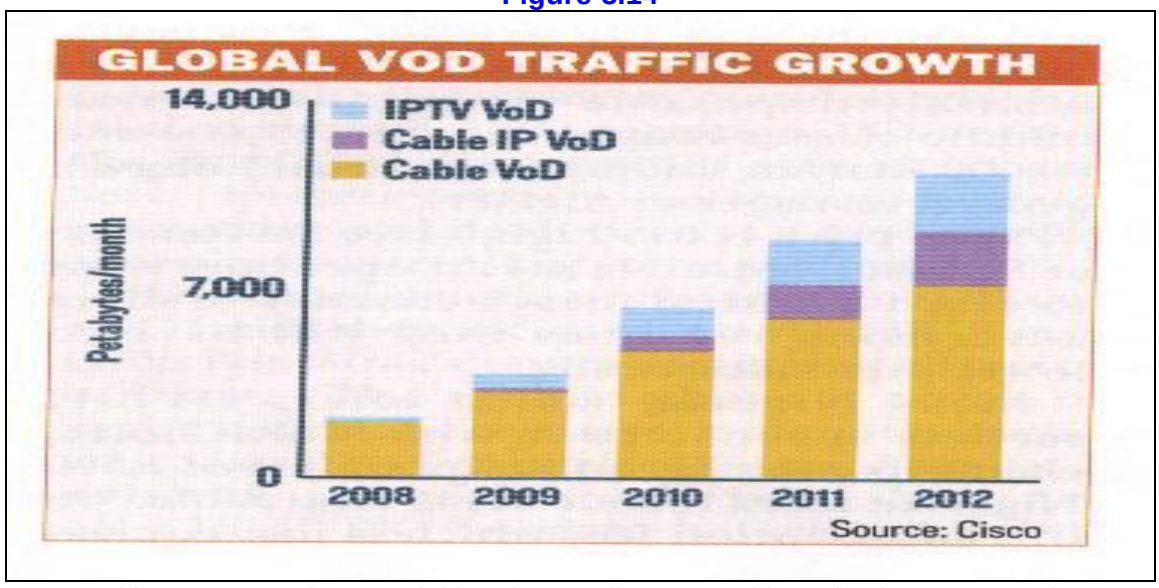


Source: IP TV Services – The next wave…by Anne Morris – Total Telecom March 2007

IPTV customers are buying video-on-demand (VoD) services in significant numbers. According to Screen Digest, IPTV VoD views in Western Europe match those on Cable TV service platforms. VoD services in whole of Western Europe were expected €350.7 million on digital cable platform and €5.2 million on IPTV platform during 2008. Consumers already value DVD and video tape purchases and rentals, so getting them to transfer this behavior or habit over to IPTV subscriptions is a key strategy in developing revenue. Gartner says by the end of 2007, there was a total global IPTV VoD subscriber base was 2.9 million which is expected to rise to 5.8 million in 2008 and 23.4 million in 2011. The Figure-5.14 below indicates the global VoD traffic growth by 2012.

[11] IPTV Strategies- I can see early now by Joanne Taaffe – Total Telecom March 2007

Figure-5.14



Source: Video on Demand-Demand driven by Anneli Groenewald-Total Telecom September 2008

Chapter 6

International Best Practices

Media is a sensitive and strategically important matter for the people as well as the governments. It impinges upon the culture, customs, traditions, beliefs and values of the society on one hand and on policies, performance, conduct and accountability of the government on the other end. In view of this media outlets are regulated and government have enacted laws, laid down regulations and prescribed procedures enabling, interested parties to enter the market setup and operate media outlets in a fair, transparent and response able manner. Different countries have dealt with the regulation and licensing in different ways. Here it will be examined how licensing is done by other countries.

6.1 Cable TV Licensing

(i) United State of America (USA)

In US cable TV services are regulated under the 1992 Cable Act. Under this act the Federal Communication Commission (FCC) has adopted, a regulatory plan allowing local and/or state authorities to select a cable franchisee and to regulate in any areas that the Commission did not pre-empt. Local franchising authorities have adopted laws and/or regulations in areas such as subscriber service requirements, public access requirements and franchise renewal standards. Under the 1992 Cable Act, local franchising authorities have specific responsibility for regulating the rates for basic cable service and equipment.

The Communications Act requires that no new cable operator may provide service without a franchise and establishes several policies relating to franchising requirements and franchise fees. The Communications Act authorizes local franchising authorities to grant one or more franchises within their jurisdiction. However, a local franchising authority may not grant an exclusive franchise, and may not unreasonably withhold its consent for new service. Included in the grant of a franchise to a cable system are rights relating to the construction of the system, including the local franchising authority's authorization to use public rights-of-way, easements (limited right of use of property), and to establish the areas to be served. Moreover, franchising authorities are required to ensure that access to cable service is not denied to any group of potential residential cable subscribers on the basis of income class. Although the Communications Act also generally precludes the regulation of cable systems as common carriers, it authorizes the Commission, to require, if it chooses, the filing of informational tariffs for intrastate communications services, other than cable service, which is provided by a cable system.

Franchising authorities may charge the cable operator a fee for the right to operate a cable system in that franchise area; however, the franchise fee paid by the cable system can be no more than five percent of its annual gross revenue. A franchising authority may use the money collected from this fee for any purpose. A

cable operator must list any applicable franchise fee as a separate item on the subscriber's bill.

(a) Registration of a Cable System

Before commencing operation, a cable system operator must send the following information to the Secretary of the Commission for each community to be served:

- The legal name of the operator, the entity identification or social security number, and whether the operator is an individual, private association, partnership or corporation. If the operator is a partnership, the legal name of the partner responsible for communications with the Commission;
- The assumed name (if any) used for doing business in the community;
- The mailing address, including zip code, and the telephone number to which all communications are to be directed;
- The date the system provided services to 50 or more subscribers;
- The name of the community or area served and the county in which it is located;
- The television broadcast signals to be carried;

A registration statement must be signed by an authorized representative of the cable television company. The Commission issues a public notice setting forth the details of each registration statement as it is received. The cable television operator is not required to serve the registration statement on any party and may begin operation immediately upon filing the registration statement. However, commencement of operation is entirely at the risk of the system operator. If violations of the rules are subsequently discovered, appropriate regulatory sanctions, including imposition of a monetary forfeiture and/ or the issuance of a cease and/ or desist order may be employed.

(b) Customer Service Guidelines

After the passing of 1992 Cable Act, the FCC in the United States adopted federal guidelines, which provide a standard for improving the quality of customer service rendered by cable operators. These guidelines provide minimum levels of service, which should be provided by a cable operator like:

- **Subscriber Calls to a Cable System:** each cable system must maintain a local, toll-free or collect-call telephone line available 24 hours a day, 7 days a week. The customer service center and bill payment locations must be conveniently located and must be open at least during normal business hours and should include at least one night per week and/or some weekend hours.
  A call to a cable system must be answered - including time the caller is put on hold within 30 seconds after the connection is made. If the call is

transferred, the transfer time may not exceed 30 seconds. Also, cable system customers may receive a busy signal no more than three percent of the time.

- **Installations, Service Interruptions and Service Calls:** Federal guidelines state that standard installations -- those which are located up to 125 feet from the existing distribution system -- must be performed within seven days after an order has been placed. Except in situations beyond its control, the cable operator must begin working on a service interruption no later than 24 hours after being notified of the problem. A service interruption has occurred if picture or sound on one or more channels has been lost. The cable operator must begin to correct other service problems the next business day after learning of them. Cable operators may schedule appointments for installations and other service calls either at a specific time or, at a maximum, during a four-hour time block during normal business hours. Cable operators may also schedule service calls outside of normal business hours for the convenience of the customer. No appointment cancellations are permitted after the close of business on the business day prior to the scheduled appointment. If the cable installer or technician is running late and will not meet the specified appointment time, he or she must contact the customer and reschedule the appointment at the convenience of the subscriber. These requirements concerning installations, outages and service calls must ordinarily be met at least 95 percent of the time, measured quarterly, under normal operating conditions.

- **Changes in Rates or Service and Billing Practices:** Thirty days advance written notice (using any reasonable written means) must be given to subscribers and local franchising authorities of any changes in rates of programming services or channel positions, if the change is within the control of the cable operator. Bills must be clear, concise and understandable, with full itemization. Cable operators should respond to written complaints about billing matters within 30 days. Refunds, if any, must be issued no later than either the customer's next billing cycle or 30 days.

- **Information to Customers:** The information about products and services offered; prices and options of programming services and conditions of subscription to programming and other services; installation and service maintenance policies; instructions on how to use the cable service; channel positions of programming carried on the system; and billing and complaint procedures, including the address and telephone number of the local franchising authority's office must be provided to the customer.
- **Home Wiring:** The home wiring rules are intended to encourage competition between multichannel video delivery services by allowing a consumer who voluntarily terminates cable service to use the wiring to receive a competing multichannel video delivery service, such as direct

broadcast satellite, wireless cable ("MMDS"), or a different cable service, without the expense and inconvenience of installing new wire.

(c) Technical Requirements

Cable systems distribute TV signals either through optical fiber or through coaxial cable strung on existing poles owned by telephone or electric utility companies. Cable operators also may use their own poles, place their cable underground or use transmission facilities or rights-of way owned or controlled by a utility or municipality. Some may use combinations of these arrangements. Sometimes conflicts arise between cable television systems and utility companies over pole attachment issues, particularly the rates for use of utility facilities. The Communications Act Amendments of 1978 authorized the Commission to resolve such disputes by regulating the rates, terms, and conditions for cable TV pole attachments to ensure they are just and reasonable unless a state regulates such factors. In 1985, the Commission adopted rules requiring each state to certify that:

- it has issued, and made effective, rules implementing the state's regulatory authority over pole attachments;
- its rules and regulations include a specific methodology for regulating pole attachments, and;
- the methodology has been made publicly available in the state.

Local pole attachment requirements may be obtained from local franchising authorities. The amended rules also require that jurisdiction revert to the Commission unless a state acts on a complaint in a timely fashion. The Commission periodically issues public notices listing those states which have filed pole attachment regulation certifications.

The 1996 Act made the existing maximum just and reasonable pole attachment rate formulas temporary applicable to telecommunications carriers and cable operators providing telecommunications services. The 1996 Act also created a distinction between pole attachments used by cable operators solely to provide cable service and pole attachments used by cable operators or by any telecommunications carrier to provide any telecommunications service. The Act prescribed a new methodology for determining pole attachment rates for the latter group. The new formulas will require that, in addition to paying their share of a pole's usable space, these telecommunications service providers also must pay their share of the fully allocated costs associated with the unusable space of the pole, duct, conduit, or right-of-way. In order to implement these new formulas, Congress directed the Commission to issue new pole attachment regulations relating to telecommunications carriers within two years after the date of enactment of the 1996 Act, to become effective 5 years after enactment.

(d) Technical Standards

To ensure the delivery of satisfactory television signals to cable subscribers, the Commission has adopted various technical performance

standards which local franchising authorities are generally authorized to enforce through their franchising process. Cable operators are required to establish a complaint resolution process and to advise their subscribers about it annually.

In addition to establishing new standards for the delivery of color signals and of closed captioned data, the Commission generally preempted conflicting local standards. Cable systems with fewer than 1,000 subscribers, as well as those serving rural areas, may negotiate with their respective franchising authorities for certain lower standards.

(ii) Japan

In Japan cable TV services are regulated under the Cable Television Broadcast Law that protects the interests of receivers of cable television broadcasts and also to foster the sound development of cable television broadcasting by ensuring proper installation of cable television broadcasting facilities and operation of service, and thereby to contribute to the promotion of public welfare.

(a) Permission to Install Facilities

- Any person who intends to install cable television broadcasting facilities and to provide cable television broadcasting service through said facilities shall obtain permission from the Minister of Public Management, Home Affairs, Posts and Telecommunications to install the facilities. This shall not apply, however, to cable television broadcasting facilities whose scale does not exceed the standard stipulated in the applicable ordinance of the Ministry of Public Management, Home Affairs, Posts and Telecommunications.
- Any person who intends to obtain permission under the preceding paragraph shall file with the Minister of Public Management, Home Affairs, Posts and Telecommunications an application form describing the area where the facilities are to be installed and other installation plans, the frequency to be used, an outline of the cable television broadcasting facilities, and the other matters stipulated in the applicable ordinance of the Ministry of Public Management, Home Affairs, Posts and Telecommunications.

(b) Permission Standards

- The Minister of Public Management, Home Affairs, Posts and Telecommunications shall grant permission to install cable television broadcasting facilities and to provide cable television broadcasting service through said facilities if he determines that an application for permission conforms to each of the following items:

  - The installation plan for the cable television broadcasting facilities shall be reasonable, and also its implementation shall be feasible.

- The cable television broadcasting facilities shall conform to the technical conditions stipulated in the applicable ordinance of the Ministry of Public Management, Home Affairs, Posts and Telecommunications.
- The applicant shall possess the financial basis and technical capabilities sufficient for reliable installation and operation of the cable television broadcasting facilities.
- In addition, installation of the cable television broadcasting facilities shall be necessary and suitable in the light of the natural, social and cultural circumstances of the area in question.

(iii) Canada

The members of the Canadian Cable Television Association (CCTA) have voluntarily developed and adopted these Cable Television Customer Service Standards to ensure high quality service to their customers. These are administered by the Cable Television Standards Foundation, and apply to all members of the Foundation. Members report regularly to the Foundation on their performance against the service standards. These are summarized below:

(a) Commencement of Service

- Each member company will:
- offer a comprehensive array of entertainment and informational video and audio products, from which the customer will be given the maximum opportunity to select those services which he/she wants, consistent with prudent consideration of regulatory, financial and marketing requirements;
- provide the basic service upon payment by the customer as follows:

  - an amount not exceeding the amount of the non-recurring costs to be reasonably incurred by the cable TV operator for the installation or reconnection of the subscriber drop;
  - the fee for basic service for one month;
  - any overdue debt of basic service that the customer owes to the cable company.

(b) Continuation of Service

- Each member company will:

- continue to provide the services to a customer as long as the customer pays the service fees for each month the services are received;
- waive the requirement for a deposit on service equipment for customers who have established satisfactory credit information;
- maintain high-quality signals in accordance with the Technical Standards Guidelines established by the CCTA and complete any necessary repairs in a timely and effective manner;
- provide service credits on request to customers who have experienced complete and extended interruption of service;

- inform customers of the hours of operation and telephone numbers for the company's business office and service department (including after hours telephone numbers);
- promptly answer inquiries from customers and the public in a friendly, courteous and knowledgeable manner;
- make available convenient methods of payment recognizing that the customers generally pay one month in advance for basic service;
- ensure that, at least once annually, all customers receive an invoice or other appropriate notification, clearly identifying, in plain and easily-understood language, those services that are part of the basic service and those services that are discretionary services, the fee for each service or package of services and for extra-cost equipment, including additional outlets and taxes, and the actions a subscriber needs to take to subscribe to or discontinue the services;
- The invoice, or other notification, as the case may be, shall show separately non-recurring costs for installations;
- upon request, provide a detailed breakdown of the customer's balance;
- indicate clearly on invoices the address, telephone number and hours of operation for both the business office and the service department;
- inform customers at least 60 days in advance of any increases to the monthly rate for the basic service. For some increases to the basic service the CRTC requires that cable companies provide at least 90 days notice before the increase comes into effect. (Cable systems not subject to rate regulation will inform customers at least 30 days in advance of any increase to the monthly rate for the basic service.);
- inform customers 30 days in advance of any increase to the monthly rate for services other than basic service;
- provide customers with reasonable advance notice of any channel lineup changes when the timing of such changes is within the cable company's control;
- ensure that all cable company employees provide identification, including a photograph, when requesting entrance to customers' premises;
- inform customers of the person within the system to whom complaints may be addressed if any inquiry or request has not been handled to the satisfaction of the customer in the ordinary course of business;
- upon request by a customer, remove his/her name from listings for mail and telephone solicitation.

(c) Termination of Service

- Each member company will:

    - arrange disconnection of basic service for the customer and refund within 45 days any prepaid funds remaining upon receipt of notice (not to exceed one month), and the return of all company-owned equipment in satisfactory operating condition, excepting normal wear and tear;

- where service is to be disconnected for non-payment of amounts owing, provide written notice to the customer at least five business days in advance of the disconnection, indicating the reason for the disconnection and the amount owed; the final payment date; the reconnection charge, and a telephone number to call for further information or comment. The five-day notice does not apply to services invoiced on a usage basis (i.e. Pay-Per- View);
- restore service after disconnection upon payment of monies owing on the account, including any applicable administration or reconnection fees;
- where service has been disconnected in error or without justification, restore service on the next working day following discovery of the error, or as soon as practicable thereafter, without payment of a reconnection or administrative charge. Provide customer with appropriate refund or credit for the period during which the service was disconnected.

(d) India

The first legal provision to regulate the cable TV industry in India began with the promulgation of the Cable Television Networks (Regulation) Ordinance, 1994 on September 29, 1994, which was converted into the Cable Television Networks (Regulation) Act 1995 (hereinafter "Cable Act"), on March 25, 1995. Some of the major provisions of the Cable Act are as follows:

(a) To operate the cable television network the operator has to be registered with the registering authority (head post-master of the head post office of the area) as a cable TV operator;
(b) Registration is renewable after every twelve months at an annual fee of Rs Five hundred;
(c) The person intending to register as cable TV operator can be:

- an individual who is a citizen of India;
- an association of individuals or body of individuals, whether incorporated or not, whose members are citizens of India;
- a company in which not less than fifty-one percent, of the paid-up share capital is held by the citizens of India;

(d) No person can transmit or retransmit programs and advertisements through the cable TV network unless they conform to the programming code and the advertisement code respectively prescribed under the rules.
(e) Cable TV operators have to use equipment that conform to the standards prescribed by the Bureau of Indian Standards, on and from the expiry of a period of three years from the date of establishment and publication of such standards.

(f) Seizure and confiscation of equipment of cable TV operators if they are unregistered or breach programming or advertisement code or fail to transmit Doordarshan channels as prescribed under the Cable Act.

(g) Contravention of any of the provisions of the Cable Act could result in imprisonment up to two years and/or fine up to one thousand rupees for the first offence and for every subsequent offence imprisonment up to five years and fine up to five thousand rupees. Under the Cable Act, the Authorized Officer has to take actions in case of violation of sections relating to "regulation of Cable Television Network", and in terms of Section 18 of the Cable Act. No court will take cognizance for any offence punishable under the Act unless there is a written complaint by an Authorized Officer.

(h) Every cable TV operator in CAS (Conditional Access System) notified area is to submit information regarding the number of subscribers, subscription rate, number of subscribers of basic tier and other pay channels to the Central Government.

The Cable Act has the provisions for monitoring of content transmitted through a Cable TV network, which is mainly focused on the channels received from broadcasters at present. With advancement of technology and demand of new value added services from consumers, cable TV operators may provide services like video on demand, interactive gaming etc. Issues relating to monitoring of such content will need to be addressed.

(iv) Comparison of Best Practices

A comparison of best practices in above mentioned countries is presented in the Table-6.1.

Table-6.1
Best Practices Comparison

S/N	Item	USA	Canada	Japan	India	Pakistan
1	**Licensing/ Authorization**	- Registration of Cable system is required - FCC, 1992 Cable Act, - Franchisee is selected by local and/ or state authorities	- License - CRTC is Authority, - Broadcasting Act 1991 & Cable Television Regulations, 1986.	- Permission for cable TV service - Ministry of Post and Telecom, - Cable Television Broadcast Law.	- Registration with the Head Post Master of Head Post Office in the Area - Ministry of Information and Broadcasting, - Cable Television Networks (Regulation) Act 1995,	- License - PEMRA, Ordinance 2002 & 2007,
2	**Eligibility**	Legal and assumed name of the operator and identification or social security number.	Applicant must be a Canadian.	Any person possessing sufficient financial basis and technical capability with reasonable/ feasible plan and broadcasting facilities confirming technical conditions as stipulated.	Indian citizen or Company with more than 51% paid up share capital with Indian citizens.	Pakistani or Company with majority of shares with Pakistani citizens. Registration with SECP.
3	**License Fee**	Franchising Authority may Charge a cable operator upto 5% of his annual gross revenue	Using formula AXB/C where A is licensee's fee revenues for the year less exemption, B is aggregate fee revenues of all licenses for the Year less exemptions and C is total regulatory costs.	Prescribed handling charges with due consideration of the actual expenses required for the examination of application	Rs. 500/- for Registration/ Annual Renewal	Rs. 10,000/- to 1,750,000/-

Continued on next page ….

4	**Technologies**	facility consisting of a set of closed transmission paths and associated signal generation, reception, and control equipment that is designed to provide cable service to multiple subscribers	Optic Fiber, Analog & Digital Signaling,	Receiving antenna for conducting retransmission and other equipment necessary for the reception of broadcasting	Analog/ Digital, CAS, IPTV	Coaxial/ Fiber Optic Cable, IPTV, Descramblers & Set-top boxes
5	**Standards**	Equipment/ cable layout, interruptions, home wiring and other technical requirements/ standards as per Federal Guidelines	Service standards have been developed by Canadian Cable Television Association (CCTA) and administered by the Cable Television Standards Foundation	Technical standards prescribed by Ministry	Programming code and Advertisement code and standards by Bureau of Indian Standards	Signal Leakage, System/ Equipment Layout as per regulations
6	**QoS**	24/7 Local toll free or collect call telephone connection for subscriber, Installations, interruptions and billing as per Federal Guidelines	High quality signals and timely repair. Notification of operation hours and business telephone numbers . Prompt reply and billing with specified details	Maintain Cable TV facilities according to technical standards prescribed in the Ordinance. Notification for discontinuation of facilities		Interruption, Maintenance of Record, New Connection, Billing, Change of TV Channel and complaint handling Procedures
7	**Fine on Violation**	Appropriate regulatory sanctions, including imposition of a monetary forfeiture and/ or the issuance of a cease and/ or desist order	Broadcasting without License: upto 20000 CAD to individual for each day offence continues & 200,000 CAD to Corporation. Contravention of Regulation or order: Upto 25000CAD to individual and upto 500,000 CAD to Corporation. Summary conviction in for contravention of license condition	Sentence upto one year or fine upto five hundred thousand yen. Various punishments depending on the nature of violation	Seizure and confiscation of equipment, imprisonment up to two years and/or fine up to one thousand rupees for the first offence and for every subsequent offence imprisonment up to five years and fine up to five thousand rupees	Rs.10,000/- or as per section 33 of Ordinance 2002

6.2 FM Radio Licensing

(i) United State of America (USA)

The total band of 88-108 Mhz is divided into 100 Channels with a spacing of 200 KHz. To specify various transmitter powers and antenna heights, eight different classes A, B1, B, C3, C2, C1, C0 and C have been made. The minimum ERP (Effective Radiated Power) varies from 6 KW to 100 KW. The permissible height varies between 100 to 600 Meters. Rule 73.211 of FCC Code of Federal Regulation mentions about minimum and maximum ERP for each class of FM station. Table-6.2 indicates FM station classes as defined by FCC.

Table-6.2
FM Station Classes as defined by FCC

FM Station Class	ERP (in kW)	HAAT (in meters)
Class A	6.0	100
Class B1	25.0	100
Class B	50.0	150
Class C3	25.0	100
Class C2	50.0	150
Class C1	100.0	299
Class C0 (C-zero)	100.0	450
Class C	100.0	600

FCC rule 73.239 also deliberates on the collocation. It says that, " No FM broadcast station license or renewal of FM broadcast station license will be granted to any person who owns, lease, or controls a particular site which is peculiarly suitable for FM broadcasting in a particular area and:

a) which is not available for use by other FM broadcast station licensees;
b) no other comparable site is available in the area;
c) where the exclusive use of such site by the applicant or licensee would unduly limit the number of FM broadcast stations that can be authorized in a particular area or would unduly restrict competition among FM broadcast stations.

(ii) Canada

In Canada too, as per Spectrum Management and telecommunications Broadcasting Procedures and Rules, August 2005, the FM channel classes are defined by the maximum permissible ERP and the associated EHAAT (effective height of antenna above average terrain).

Table-6.3
FM Classes

FM Station Class	ERP (in kW)/	EHAAT (in meters)
Class A1	0.25	100
Class A	6.0	100
Class B1	25.0	100
Class B	50.0	150
Class C1	100.0	300
Class C	100.0	600

Table-6.4 specifies the minimum domestic separation distances in kilometers for all classes of channel assignments, using the protected contour levels. The appropriate contours for Class C channels are based on an ERP of 100 kW and an EHAAT of 450 meters.

Table-6.4
Minimum Domestic Separation Distances in Kilometers

Class A1	Co-channel	78					
	200 kHz	45					
	400 kHz	22					
	10.6/10.8 MHz	4					
Class A	Co-channel	131	151				
	200 kHz	78	97				
	400 kHz	42	47				
	10.6/10.8 MHz	7	10				
Class B1	Co-channel	164	184	197			
	200 kHz	98	118	131			
	400 kHz	55	60	63			
	10.6/10.8 MHz	9	12	24			
Class B	Co-channel	189	209	222	236		
	200 kHz	117	137	150	164		
	400 kHz	68	73	77	84		
	10.6/10.8 MHz	12	15	24	24		
Class C1	Co-channel	223	243	256	270	291	
	200 kHz	148	168	181	195	216	
	400 kHz	90	95	99	106	119	
	10.6/10.8 MHz	19	22	40	40	48	
Class C	Co-channel	238	258	271	285	306	317
	200 kHz	166	186	199	213	234	245
	400 kHz	101	106	110	117	131	139
	10.6/10.8 MHz	26	32	40	40	48	48
	Relationship	Class A1	Class A	Class B1	Class B	Class C1	Class C

FM station transmitters is required to be located to serve the principal centre to which the channel is assigned. Transmitter sites are required to be located so that the separations are not less than those set forth.

(iii) New Zealand

VHF-FM broadcasting usage in New Zealand is based on a minimum frequency separation of 800 kHz between licenses at the same transmitting site. This is known as an "800 kHz raster" and is consistent with ITU-R technical standards. It recognizes the typical quality of receivers in use and the efficient practice of multiplexing transmitters to a common antenna. In some circumstances, particularly where several sites might be used to cover the same general area or when infill coverage licenses might reduce license availability at a main site, frequency separations as narrow as 600 kHz have been trialed and generally found to be satisfactory for long-term use in that situation. However during the trials it was observed that in some of the areas the use of licenses separated by 400 kHz might be limited by "co-channel" use of the same frequency in nearby areas. Further, presently available sub-carrier technologies, such as SCA and RDS, may be difficult to apply with narrower separation of frequencies, and future technologies such as digital IBOC may be impractical. Considering these wider implications, the full extent of new licenses that might be available with rasters of less than 800 kHz has not yet been quantified.

Under revised FM Licensing criteria for VHF-FM broadcasting stations in New Zealand government will:

- Resolve licensing issues arising from the two identified trials with the parties concerned;
- Not create further licenses at an established site if the resultant frequency separations do not comply with the established 800 kHz raster at that site;
- Not create further licenses at an established site which has overlapping coverage with another site if the new license would have a narrower frequency separation from a license at the other site, than exists at present between the two sites;
- Only consider further trials of co-sited licenses at separations of less than 800 kHz where the trial will, in the Ministry's opinion, provide new technical information that will assist further policy development;
- Consider applications for temporary new licenses at new sites (i.e. locations without existing FM licenses) intended to cover portions of the coverage area from an existing site, provided that:

    - the new license covers a minor part (less than 25% of the population) of the main coverage site;
    - the new license does not directly preclude a "on raster" licence at the main site;
    - ITU-R protection ratios in Recommendations 412-9 are met;

- the license is agreed as temporary until issues related to narrower (less than 800 kHz) separation are resolved;
- there is no expectation of the license being made available on long term basis.

(iv) South Africa

In the VHF FM sound-broadcasting band between 87.5 MHz and 108 MHz there are 204 channels, each of 100 KHz bandwidth. These are grouped into 31 groups of 6 channels, plus additional 18 channels. The groups distributed in a uniform lattice where each node point relates to a transmitting area. This means that at any one transmitting site in an area the ITU plan provides for 6 channels or frequencies to be available for assignment. In areas of greatest demand, 12 channels were assigned to one area by combining 2 lattice node points. In order to provide national FM coverage it was necessary to locate high power transmitting stations approximately 110 Km apart. Although such a transmitting station may only have a coverage radius of 30 -50 Km, interference from such a station can occur over hundreds of kilometers. In order to avoid mutual interference between stations operating on the same frequency, it is necessary for the signal from the wanted station to be between 37 dB and 45 dB higher (i.e. 5 000 and 30 000 times stronger) than the interfering signal. Hence a high power FM frequency can only be reused at a distance of close to 500 Km. On the other hand, low power (for e.g. 1 watt) FM transmitters using the same frequency can be situated some 10 km apart (depending on the terrain and broadcasting antenna characteristics and site height) due to its limited area of coverage and interference impact.

As per frequency plan envisaged in Notice of Publication of Terrestrial Broadcast Frequency Plan, 2002 by Independent Communication Authority of South Africa (ICASA), a balance between universal access to PBS services and diversity within the categories of services are to be maintained

(v) Australia

Frequency Modulation (FM) broadcasting services in Australia have a nominal bandwidth of 200 kHz and operate in the very high frequency Band II (VHF Band II). There are approximately 1600 licensed FM broadcasting services with transmissions ranging from very low power to 250 kW effective radiated power (ERP).

a) Co-location

Many higher power national and commercial FM services are currently co-located with television services and, if these services have complementary VHF or UHF wideband digital radio services, would be best suited using the same site. Conversely, most community and low–power FM services have their own transmission sites, which are often not co-located with television transmission facilities. If the digital radio system is to operate in a TV frequency band, co-siting with TV services will give the best spectrum productivity.

- **Program multiplexing and distribution**

In some cases, particularly for high power commercial and national FM services, a common multiplex and transmission facility may be practicable. In the case of low power community services, a common multiplex and transmission infrastructure does not appear to be practicable without a major rearrangement of license areas (e.g. aggregation of smaller license areas into larger license areas).

- **Maximum antenna height:**

As stipulated in Broadcasting Services (Technical Planning) Guidelines 2007:

If a transmitter is sited at the nominal location, the licensee shall ensure that the height of the electrical centre of the transmitting antenna above ground does not exceed the maximum height specified in the LAP (License Area Plan).

If there is no technical specification specified in a LAP for a transmitter, the height of the electrical centre of the transmitting antenna above ground shall not exceed that specified in the technical conditions of the transmitter license.

Chapter 7

Electronic Media Market and Prospects

7.1 Introduction

Development of any market depends on drivers relevant to the market. In case of media, the list of such drivers includes investment climate, inflow of FDI, GDP growth rate and stock exchange index etc. However list of market drivers does not end here. It necessarily includes government policies with regard to liberalization, privatization and removal of barriers to market entry. Then comes the regulatory framework, its transparency, availability of level playing field and fair competition, promotion measures and regulations.

General drivers applicable to all components of markets depend on rule of law, control over inflation and political stability. In case of media the volume of market is generally measured in terms of advertisement expenditure called Ad Spend.

Ad Spend comprises components of revenues earned by electronic and non-electronic media player. List comprises of television broadcast channels, radio broadcast stations, print media, outdoor media like bill boards and direct marketing etc. Recently internet has entered the field and commercial enterprises have found it effective for advertisement.

Figure-7.1 shows historical trend of Ad Spend-GDP ratio for the last seven years. The ratio has been improving over years. Figure 7.2 shows Ad Spend and KSE-100 Index for the same period. It is indicative of an association between Ad Spend and business Activity. Past trend of gradual increase in Ad Spend components relating to advertisements on TV channels and Radio stations has also been studied vis a vis the number of satellite TV channels and FM Radio stations.

Figures-7.3 and 7.4 show association between TV and Radio components of Ad Spend, GDP and number of Satellite TV channels and FM Radio stations respectively.

Table -7.1
Ad Spend ~ GDP Ratio, Pakistan, 2001-02 to 2007-08

Year	Ratio
2001-02	0.06
2002-03	0.08
2003-04	0.09
2004-05	0.1
2005-06	0.12
2006-07	0.18
2007-08	0.21

Figure-7.1
Ad Spend ~ GDP Ratio, Pakistan, 2001-02 to 2007-08

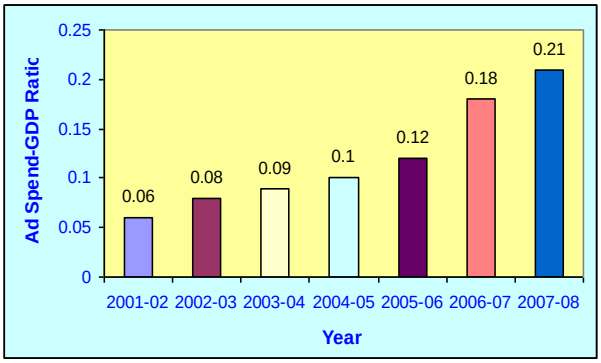
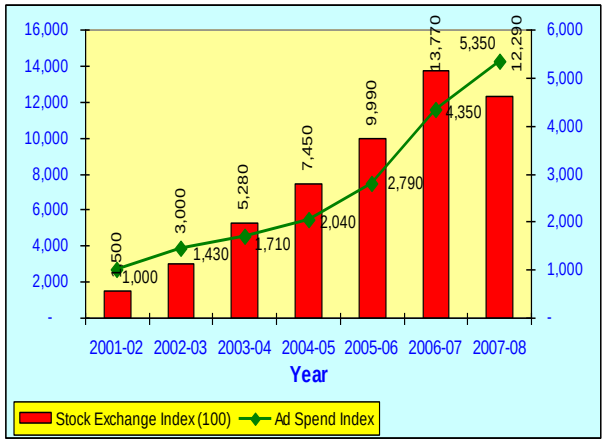


Table-7.2
Ad Spend Index and Stock Exchange Index, Pakistan, 2001-02 to 2007-08

Year	Ad spend (Rupees Million)	Ad Spend Index	Stock Exch. Index (100)
2001-02	2340	1000	1500
2002-03	3350	1430	3000
2003-04	4000	1710	5280
2004-05	4770	2040	7450
2005-06	6530	2790	9990
2006-07	10170	4350	13770
2007-08	12,520	5350	12290

Source- TEACH

Figure-7.2
Ad Spend Index and Stock Exchange Index, Pakistan, 2001-02 to 2007-08



Note:

- Ad Spend Index: Ad Spend for year 2001-2002 adopted as base with value 1000;
- Stock Exchange Index: Actual Karachi Stock Exchange Index (KSE-100);
- The historic data relates to a period starting with the liberalization of media market.

Table-7.3
Growth of GDP, TV Ad Spend and number of TV channels, Pakistan, 2001-02 to 2007-08

Year	GDP (Rupees Billion)	Ad Spend (Rupees Billion)	Number of TV Channels
2001-02	4476	2.66	4
2002-03	5027	3.28	4
2003-04	5765	4.20	15
2004-05	6634	5.70	16
2005-06	7773	7.29	19
2006-07	8882	9.50	36
2007-08	10712	11.91	56

Source- TEACH

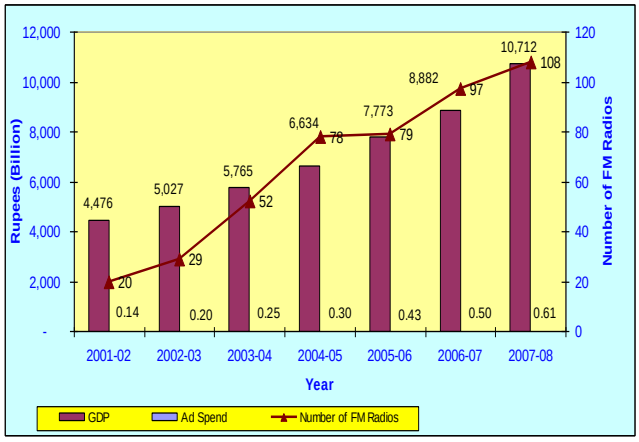
Figure-7.3
Growth of GDP, TV Ad Spend and number of TV channels, Pakistan, 2001-02 to 2007-08

Table-7.4
Growth of GDP, Radio Ad Spend and number of FM Radio stations , Pakistan, 2001-02 to 2007-08

Year	GDP (Rupees Billion)	Ad Spend (Rupees Billion)	Number of FM Radio Stations
2001-02	4476	0.14	20
2002-03	5027	0.20	29
2003-04	5765	0.25	52
2004-05	6634	0.30	78
2005-06	7773	0.43	79
2006-07	8882	0.50	97
2007-08	10712	0.61	108

Source- TEACH

Figure-7.4
Growth of GDP, Radio Ad Spend and number of Radio stations, Pakistan, 2001-02 to 2007-08



7.1.1 Prospects of Ad Spend Growth

There are some important underlying contributory determinants of the Ad Spend. It would be worthwhile to study the future prospects of these determinants. Telecommunication sector is one of the important contributor, which after deregulation has been expanding fast and it is a precursor to media market development.

In recent past major contributor to media development has been the mobile phone operating companies which have significantly been helpful in generation of Ad Spend. The advertisements and sponsorship campaigns of companies have had share of 29 percent to 33 percent in TV news channels revenues and 26 percent in TV entertainment channels revenue and 35 percent in music TV

channel revenues. It is foreseen in studies carried out by PTA that telecommunication sector will continue to expand. New telecommunication services like 3G (Third Generation mobile) are expected to be launched by cellular mobile operators. Broadband services like WiMax, DSL, and FTTH will invade the market in competition with each other. The mobile phone system in telecommunication sector is expected to grow by about 7.5 percent per year. This contribution of telecommunication sector to Ad spend is expected to increase concomitantly.

In view of strong linkages between telecommunication industry and broadcasting industry (both are part of ICT) the media market is expected to experience growth as well.

Convergence between telecommunication and broadcasting is likely to happen on a grand scale. Convergence is foreseen at all levels and in different forms e.g. in shape of device convergence, network convergence, services convergence and industry convergence. This phenomenon will provide for common use of telephone line, terminals like computers and mobile phone handsets for broadcast media. Among other things it will result in lowering the cost to end users, making services more affordable and increasing access to media and providing viewership. Already mobile phone handsets with capability of receiving FM Radio and TV are being sold. When 3G mobile service is introduced, its handsets with even greater adaptability as electronic media apparatus broadcasts will become available. Computers terminal are used to receive TV and Radio programs through internet connections. Resultantly, telecommunication market is expected to help electronic media to grow by push pull effect.

Besides telecommunication there are other industries which significantly contribute to electronic advertisements. Soft drink, milk, edible oils and biscuits industry use TV & Radio for advertisement extensively. Insurance and banking sector also make use of electronic media for promotion of their businesses. Real estate developers use the electronic media in marketing campaigns. As the economy revives role of media marketing is expected to enhance. Marketing through electronic media is likely to be adopted by other sectors of economy in due course. More and more commercial houses are joining the trend for use of electronic media. This will expand the electronic media industry vertically as well as horizontally and consequently allocations for advertisement will further rise in the market. Educated business professionals graduating from universities in large numbers will further popularize the culture of electronic media. Increase in number of media outlets will fuel this drive and further expand the Advertisement spending (Ad Spend) in the economy.

7.2 Components of Advertisement Spend

The performance of media market including the advertisement spend (Ad Spend) in Pakistan is monitored by media Research and Monitoring agencies. Gallup Pakistan and Aurora have estimated the Ad Spend for the year 2007-08 as Rs.25.0 billion and Rs.24.36 billion respectively. After discussion with experts

TEACH has taken the Gallup Pakistan figure i.e.Rs.25 billion for study and analysis of the Ad Spend market. The share of different media components e.g. TV channels, Print, outdoor, Radio and direct marketing media in the Ad Spend is shown in Figure-7.5.

Of the total Ad Spend in 2007-08, major share (Rs 11.9 billion) has been taken by TV. The Radio received a share of only Rs.0.6 billion which is the minimum.

7.2.1. Growth of Ad Spend

With the increase in the number of satellite TV channels and FM Radio stations there is gradual change in the share of different media components. The percentage share of TV and Radio is increasing gradually and percentage share of print media is decreasing. Internet is emerging as a new medium of advertisement. This trend has been seen during the last 3 to 4 years and is likely to persist. In due course TV, Radio and internet advertisement is expected to become more and more popular day by day. Based on the data of past 4 years, it is estimated by trend analysis that by year 2015 the media components will have a different proportion of share in Ad Spend. The anticipated distribution as compared to current position is shown in Table-7.5 and Figure-7.5.

Table-7.5
Media Components, Pakistan, 2007-08 and 2014-15

Item	2007-08		2014-15	
	Actual	Percent	Projected	Percent
TV	11.91	47.3	18.02	52.3
Print Media	8.16	32.4	9.40	27.3
Outdoor	2.70	10.7	2.70	7.8
Radio	0.61	2.4	1.07	3.1
Direct Marketing	1.68	6.7	2.50	7.3
Internet	0.12	0.5	0.75	2.2

Figure - 7.5
Media components in the Ad Spend, Pakistan, 2007-08

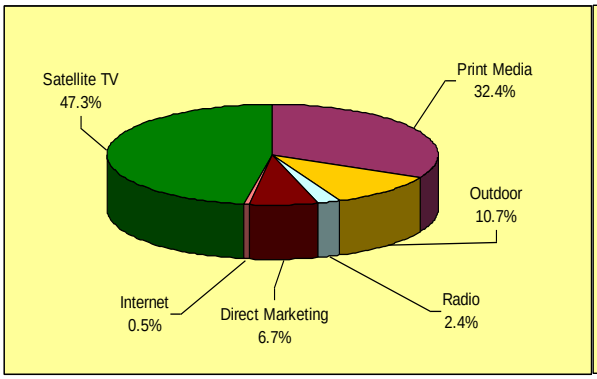
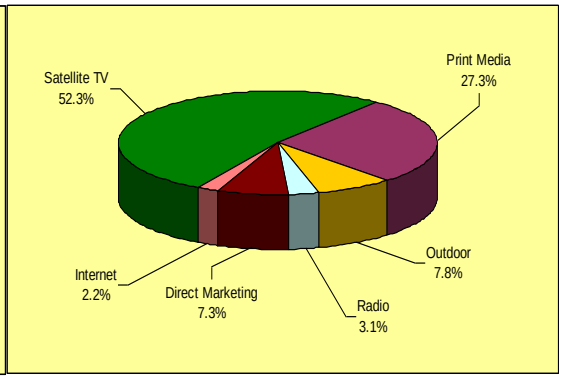


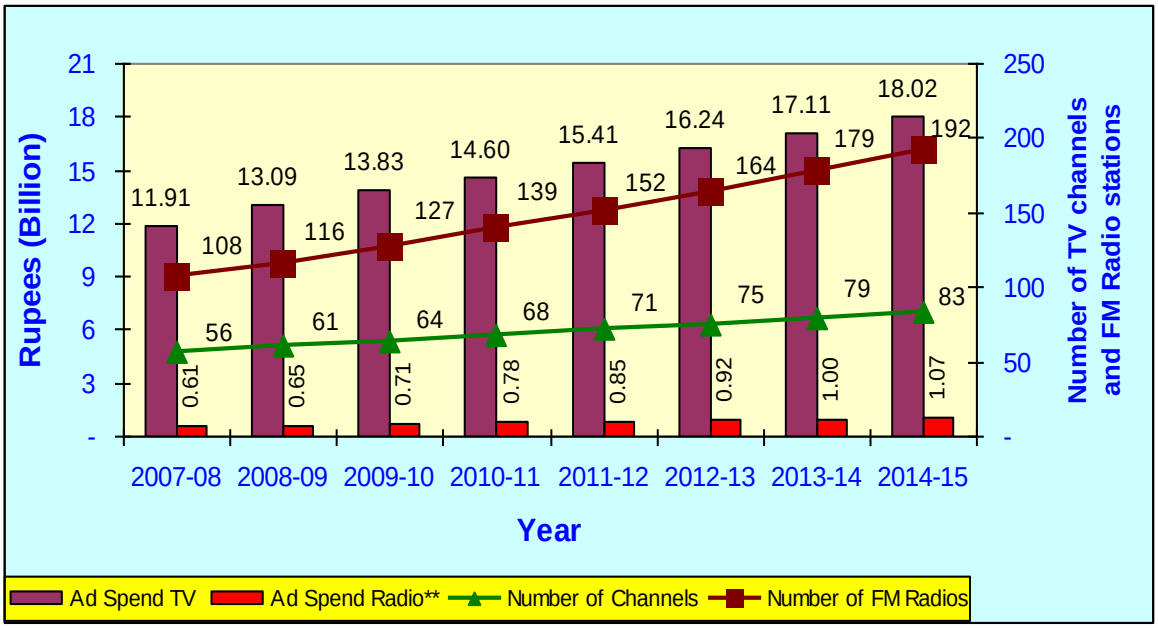
Figure - 7.6
Projected Media Components in the Ad Spend, Pakistan, 2014-15



Source: Teach

The amount of Ad Spend generated depends on the economic activity in the country and its growth. Pakistan economy in terms of GDP has grown by an average growth rate of 6.8 percent in the last seven years. However because of recent slow down in the economic activity the growth rate is expected to be lower. It is being estimated at 2.5 percent for the current financial year. Using the data about yearly GDP growth rate and Ad Spend generated for the last seven years a regression analysis has been carried out. According to international financial institutions like IMF and World Bank, global economy is foreseen to pick up in a year or so. Present situation of uncertainty does not allow to arrive at a realistic estimate of GDP growth rate for the coming years. The growth of Ad Spend has therefore been calculated using three different assumption of GDP growth viz 2.5 percent, 4 percent and 6.8 percent per annum. After discussion with experts and stakeholders the medium GDP growth rate of 4 percent has been considered appropriate for making projections of Ad Spend for next seven years i.e. up to year 2015. Figure-7.7 shows the trend.

Figure-7.7
Projections of Ad Spend, Pakistan, 2007-08 to 2014-15



Source: TEACH and Gallup Pakistan

Based on the above mentioned estimates of Ad Spend amount and percentage share of different media components by year 2015, the number of Satellite TV channels and FM Radio stations which could sustain the market are discussed.

7.3 Methodology for projection of number of Satellite TV channels and FM Radio Stations

7.3.1 Satellite TV channels

The debate about number of Satellite TV channels which should be licensed in future includes the discussion on the following considerations.

1. The survey data indicate that sixty one percent of respondents would like additional Satellite TV channels to be available to them. The survey data also shows that 67 percent respondents consider that existing number of TV channels is not enough.

2. Sixty four percent of respondents indicated in the survey that they would like to see additional Pakistani channels. Another 42 percent indicated that they would like to add additional foreign channels. This highlights the importance of local industry in meeting the additional requirement.
3. Noting the existence of demand for additional channels, there is a need to work out the number of Satellite TV channels which could be accommodated profitably and be sustained.

4. The income of such Satellite TV channels comes out of advertisement expenditure (Ad Spend). To workout the number of new Satellite TV channels, Ad Spend amount as projected for future years and the cost of sustaining a Satellite TV channels has to be taken into account.

5. Satellite TV channels, content and programme-wise are of different categories such as news/current affair channel, entertainment channel and specific programme channels like music, sport, education channel or mixed programme channel. The number of categories is large. However, their number has been narrowed down to three categories by grouping similar type of Satellite TV channels together namely

    - News and Current Affairs channel (C1).
    - Entertainment channel (C2) and lastly
    - Specific programme channel (C3).

The sustenance cost of each category of TV channel differs. The sustenance cost of each category of TV channel as determined through business survey, FGD and discussion with stakeholder is given below along with number of working channels of each category.

Table-7.6
Categories and sustenance cost of Satellite TV Channels, Pakistan, 2009

Category (1)	Type (2)	Number of TV channels (3)	Sustenance Cost of one TV channel (Rupees million) (4)	Total Sustenance cost (Rupees million) (3)x(4)
C1	News, current affairs	7	600	4200
C2	Mixed, entertainment	10	300	3000
C3	Sports, music and education	39	125	4875
Total		56		12075
Average				216

Methodology
The cost of sustaining one satellite TV channel based on weighted average works out to be Rs.0.216 billion as shown in Table-7.6

The projections of number of Satellite TV channels for a particular year has been based on potential demand of such channels, as expressed by respondents in the survey, cost of sustenance of a Satellite TV channel and amount of Ad Spend projected for that year . The Ad Spend projections have been made by regression analysis based on historic data and annual GDP growth rate.

Table-7.7 to Table-7.9 show the GDP growth, Ad Spend and the number of TV channels based on GDP growth rate of 2.5 percent, 4 percent and 6.8 percent respectively.

Table-7.7
Projections of TV Ad Spend and number of TV channels, Pakistan, 2008-09 to 2014-15
(Based on GDP growth rate of 2.5 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (Rupees Billion)	10,979	11,254	11,535	11,824	12,119	12,422	12,733
Ad Spend (Rupees Billion)	12.82	13.28	13.75	14.23	14.72	15.23	15.74
Number of Satellite TV channels	59	61	64	66	68	70	73

Source: TEACH

Table-7.8
Projections of TV Ad Spend and number of TV channels, Pakistan, 2008-09 to 2014-15
(Based on GDP growth rate of 4 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (Rupees Billion)	11,140	11,586	12,049	12,531	13,033	13,554	14,096
Ad Spend (Rupees Billion)	13.09	13.83	14.60	15.41	16.24	17.11	18.02
Number of Satellite TV channels	**61**	**64**	**68**	**71**	**75**	**79**	**83**

Source: TEACH

Table-7.9
Projections of TV Ad Spend and number of TV channels, Pakistan 2008-09 to 2014-15
(Based on GDP growth rate of 6.8 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (Rupees Billion)	11,440	12,218	13,049	13,936.	14,884	15,896	16,977
Ad Spend (Rupees Billion)	13.59	14.88	16.27	17.75	19.33	21.02	22.83
Number of Satellite TV channels	63	69	75	82	90	97	106

Source: TEACH

Currently fifty six satellite TV channels are operational in the country. PEMRA has already issued seventy two licenses for such channels, As shown in table 7.8 to 7.9 the number of satellite TV channels with assumed GDP growth rates of 2.5, 4 and 6.8 percent per annum is estimated to be 73, 83 and 106 respectively by year 2014/15. Based on this analysis it is considered that 83 satellite TV channels would be sustainable by the year 2015 as sufficient Ad Spend is expected to be generated by market to support this number of TV channels.

7.3.2 FM Radio Station

An exercise has been carried out to determine the future number of FM Radio stations based on amount of Radio Ad Spend. FM Radio stations can be categorized into three groups namely (1) Metropolitan city FM Radio stations (R1) with average sustenance cost of Rs12 million per year, (2) large city FM Radio stations (R2) with sustenance cost of Rs 6 million per year and (3) small city FM Radio stations (R3) with average sustenance cost of Rs.2.4 million per year.

Number of private FM Radio stations operating currently in the three categories include (1) FM Radio stations category R1-18, (2) FM Radio stations category R2 - 49 and (3) FM Radio stations category R3 - 41.

Table-7.10
Categories and sustenance cost of FM Radio Stations

(Rupees Million)

Category	Number of FM Radio Stations	Sustenance cost of one FM Radio Station	Total sustenance cost
(1)	(2)	(3)	(2)x(3)
R1	18	12	216
R2	49	6	294
R3	41	2.4	98
Total	108		608

Source: TEACH

Methodology
Weighted average sustenance cost of one FM Radio station = 608/108 = Rs 5.6 million which has been taken to workout number of sustainable FM Radio stations in Table 7.12 to 7.14

The prediction of Ad Spend for FM Radio stations has been worked out on the basis of three GDP growth rates of 2.5 percent, 4 percent and 6.8 percent. In the light of reasons explained in case of TV channels, Radio Ad spend figures with assumption of 4 percent GDP growth rate have been adopted. It shows 192 FM Radio stations sustainable by year 2014-15. As experience 95 FM Radio stations are already in operation, installation of additional 83 FM Radio stations can be accommodated by the year 2014-15.

Table-7.11
GDP, Radio Ad Spend and number of FM Radio Stations, Pakistan, 2001-02 to 2007-08

Item	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
GDP (Rupees Billion)	4,476	5,027	5,765	6,634	7,773	8,882	10,712
Ad Spend (Rupees Billion)	0.14	0.20	0.25	0.30	0.43	0.50	0.61
Number of FM Radio Stations	20	29	52	78	79	97	108

Source: TEACH

The yearly projection of FM Radio stations is given in Table-7.12 to Table-7.14 for three different scenarios of GDP growth rates of 2.5 percent, 4 percent and 6.8 percent respectively.

Table-7.12
Radio Ad Spend and number of FM Radio Stations, Pakistan, 2008-09 to 2014-15
(Based on GDP growth rate of 2.5 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (Rupees Billion)	10,979	11,254	11,535	11,824	12,119	12,422	12,733
Ad Spend (Rupees Billion)	0.63	0.67	0.71	0.75	0.79	0.83	0.88
Number of FM Radio Stations	112	119	126	134	141	149	157

Source: TEACH

Table-7.13
Radio Ad Spend and number of FM Radio Stations, Pakistan, 2008-09 to 2014-15
(Based on GDP growth rate of 4 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (Rupees Billion)	11,140	11,586	12,049	12,531	13,033	13,554	14,096
Ad Spend (Rupees Billion)	0.65	0.71	0.78	0.85	0.92	1.00	1.07
Number of FM Radio Stations	**116**	**128**	**139**	**152**	**165**	**178**	**192**

Source: TEACH

Table-7.14
Radio Ad Spend and number of FM Radio Stations, Pakistan, 2008-09 to 2014-15
(Based on GDP growth rate of 6.8 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (Rupees Billion)	11,440	12,218	13,049	13,936	14,884	15,896.	16,977
Ad Spend (Rupees Billion)	0.69	0.81	0.92	1.05	1.19	1.33	1.49
Number of FM Radio Stations	124	144	165	188	212	238	265

Source: TEACH

The sustainable number of FM Radio stations by 2014-15 workout to be 157, 192 and 265 based on GDP growth rate of 2.5, 4 and 6.8 percent respectively. For planning purposes, figure of 192 FM Radio stations by year 2014-15 based on 4 percent average annual GDP growth rate is recommended. It may be noted for comparison sake that there are 2400 FM Radio stations in Indonesia.

It is noteworthy that in Pakistan total Ad Spend size of Rs.25 billion in 2007-08 is merely around 0.2 percent of GDP. On the other hand world average of media revenue to GDP ratio stands at 1.9 percent. It shows that there is a lot of scope for increase in Ad Spend in the Pakistan market.

7.4 Cable TV

7.4.1 Existing Scenario

PEMRA has so far issued 2224 licenses of different categories for cable TV service. Table-7.15 shows category wise breakup of number of CTV licenses issued by PEMRA so far.

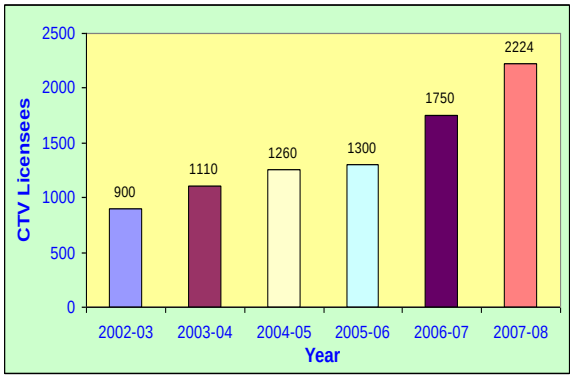
Table-7.15
Category and Number of Cable TV Licensees by provinces, Pakistan, 2009

Type	Category	Islamabad	Punjab	Sindh	NWFP	Balochistan	Total
Small category licenses	B	16	146	0	10	2	174
	B-1	79	217	159	35	15	505
	B-2	25	79	101	12	1	218
Larger category licenses	B-3	14	17	38	2	1	72
	B-4	2	10	16	0	0	28
	B-5	2	0	9	0	3	14
	B-6	2	1	4	0	0	7
	B-7	6	4	0	0	0	10
	B-8	0	2	4	0	0	6
	B-9	0	0	1	0	0	1
	B-10	0	0	2	0	0	2
Hotel licenses	H	0	2	1	0	0	3
	H-1	0	5	2	0	0	7
	H-2	0	2	1	0	0	3
Rural licenses	Rural	185	505	391	44	49	1174
	Total	331	990	729	103	71	2224

Source: TEACH

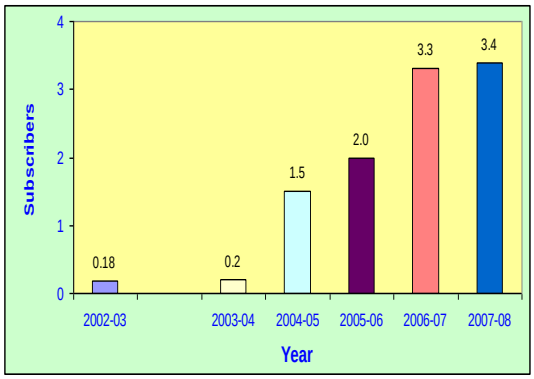
Figure 7.8 and Figure 7.9 show historic data about growth of number of CTV licenses issued by PEMRA and their subscribers in the country respectively.

Figure-7.8
Growth of Number of CTV Licenses, Pakistan, 2002-03 to 2007-08



Source: PEMRA

Figure-7.9
Growth of Number of CTV Subscribers, Pakistan, 2002-03 to 2007-08
(Million)



Source: TEACH

Estimation of number of CTV subscriber is complex. CTV annual renewal of License charges are based on number of subscribers. As a result operators are reluctant to report correct number of clients.

The number of CTV subscribers in year 2006-2007 increased to 3.27 million because of a concerted enforcement action taken by PEMRA. The number of subscribers for 2007-08 is reported as 3.42 million which appears to be reasonable because it represents a natural growth over the last year.

Box-7.1

Cable TV companies operaing in cities also carry local advertisements which they insert in shape of highlighted text and sometime slides. The rates of advertisements are economical. The revenue generated by such cable TV companies is appreciable but is not being reported fully. Estimates vary. In light of discussions with stakeholders it is assessed that advertisement revenue of Rs.100,000 to Rs.200,000 per city CTV operator per month is generated. Based on average revenue of Rs.150,000 per operator per month and round figure of 1000 city based operators total CTV advertisement revenue is estimated as Rs.1.8 billion per annum

7.5 Cable TV Projections

Figure-7.9 shows the historic trend of growth of number of CTV subscribers in the country. In the early years growth rate was not significant. As soon as a licensing regime was introduced by PEMRA, there was rapid increase in the number of CTV licenses and subscribers. High growth rate was registered in the years 2004-05 and 2006-2007 which is now expected to stabilize. There are about 22 million households in Pakistan out of which, according to available data, only 3.7 million have CTV connections. Clearly there is a big potential for expansion of CTV and other networks which distribute TV channels. CTV facility is being also provided by broadband connections which are operated by the telecommunication companies. PTCL, the biggest fixed line phone company of Pakistan has recently introduced IPTV service on the telephone lines to distribute TV channels. Two cellular mobile companies of Pakistan have obtained license to transmit TV programme on mobile hand sets.

The historic data of increase in number of CTV subscribers relates to past seven years only, and does not indicate a well defined pattern which could be made use of in regression analysis to prepare a forecast for future. However using trend analysis a forecast of number of conventional CTV subscribers for next seven years has been prepared and is shown in Table 7.15. A PTA study shows that broadband service will increase at an average rate of seven percent per year and number of connections is expected to reach a figure of 1.4 million by the year 2014-15. Subscribers will have access to CTV facility through these connections. Conventional CTV network subscribers and number of broadband connections added together indicate the total number of CTV subscribers. Projections have accordingly been prepared and given in Table 7.16. As may be seen there will be 7.0 million subscribers availing CTV service by year 2015.

Table-7.16
Overall projections of CTV subscribers including Broadband, Pakistan, 2009

(Million)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
CTV subscribers	3.75	4.08	4.42	4.70	5.00	5.34	5.60
Broadband connections	0.25	0.32	0.42	0.62	0.85	1.10	1.40
Total	4.0	4.4	4.84	5.32	5.85	6.44	7.00

Source: TEACH

Besides CTV MMDS service has been operating at Lahore, Karachi, Islamabad, Okara and Sahiwal. The number of subscribers being served by MMDS reported in 2007-08 is 222,000.

The projections of number of MMDS subscribers are given in the Table7.17.

Table-7.17
Projections of MMDS subscribers, Pakistan, 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Number of MMDS Subscribers	237,700	254,000	272,200	291,000	311,600	333,400	356,800

Methodology
The numbers of subscriber have been increasing every year. In 2007/08 there were 222,000 subscribers. Present count is 2,37,700. Based on the increasing trend a forecast has been prepared for next seven years

7.6 DTH Subscriber Projections

At the moment no Pakistani company is operating Direct To Home (DTH) service in Pakistan as decision for award of licenses is still under consideration by PEMRA. Case of two private companies is under consideration in this regard. PTV the national broadcaster has also shown interest to launch DTH service. Presently Indian DTH service is being marketed without authorization. Estimated number of DTH subscribers working from overseas operators is reported by media experts in FGD, to be not more than 100,000.

Table-7.18
Projections of DTH subscribers, Pakistan 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Subscriber	0	10,000	30,000	60,000	90,000	120,000	150,000

Methodology
The forecast has been prepared based on three DTH operators each launching service in 2009/10, 2010/11 and 2011/12 with 10,000 subscriber added each year by each operator.

7.7 Investment Projections

The investment cost involved in setting up electronic media stations varies over a wide range. There are different options in selection of technology and origin of equipment. The equipment made locally is much cheaper, while imported equipment costs according to country of origin. The investment cost will depend on the scope of work, size and location of project, efficacy of the project management and cost of finance. This premise is true for setting up of a TV channel, a radio station and cable TV network. In order to work out the average investment generic estimate, cost has been prepared using market figures of equipment and installation charges. Cost figure based on discussion with numerous operators/owners in Focused Group Discussion (FGD) have been taken and weighted average has been calculated. The figures of cost were taken from one source and rechecked against other source before adoption.

7.7.1 Satellite TV Channels

According to projections 83 Satellite TV channels can operate in a sustainable manner by the year 2014/15. As 56 TV channels are already functional, there is a scope of 27 additional Satellite TV channels in the market. Investment projections have been prepared accordingly. Rs 350 million has been taken as average of weighted investment cost for one new Satellite TV channel.

Table 7.19
Projections of Satellite TV Channels, Pakistan, 2008-09 to 2014-15

(Rupees Million)

Year	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Additions of channels during year	5	3	4	3	4	4	4	27
Investment	1750	1050	1400	1050	1400	1400	1400	9450

7.7.2 FM Radio Stations

Till 2007/08 108 FM Radio stations have been installed in the private and public sector. According to projections a total of 192 FM Radio stations can operate on sustainable basis by year 2014/15. Investment calculations have been made for the projected 84 additional radio stations.

Table 7.20
Projections of FM Radio Stations, Pakistan, 2008-09 to 2014-15

(Rupees Million)

Year	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Total
Additions of stations during year	8	11	12	13	12	15	13	84
Investment	32	44	48	52	48	60	52	336

The investment cost per station on the basis of use of standard equipment and networking is estimated as Rs.6 million for category R1 Radio station,

Rs.4 million for category R2 Radio station and about Rs.3 million for category R3 Radio station. Weighted average cost of Rs.4 million per station has been taken to work out investment in FM Radio stations

7.7.3 Cable TV investment Projections

According to projection number of cable TV subscribers is likely to increase to 5.6 million by year 2014/15. Ninety percent of cable TV operators use coaxial cable network which costs Rs.2000 per subscriber. Based on this figure investment in cable TV has been worked out for future years and included in Table 7.21.

7.7.4 MMDS and Broadband / IPTV network

The information from stake holders indicate an incremental cost of Rs.4000 per new connection. Based on MMDS and Broadband subscriber projections, investment estimate have been worked out and given in Table 7.21.

7.7.5 DTH

Three DTH platforms are foreseen to be installed in next seven years. Venders and other stake holder indicate cost of Rs.400 million per platform. Investment for DTH in coming year has been included on the same basis in Table 7.21

Table-7.21
Electronic media yearly investment Projection 2008-09 to 2014-15

(Rupees Billion)

Type	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Satellite TV	1.8	1.1	1.4	1.1	1.4	1.4	1.4
FM Radio	0.03	0.04	0.05	0.05	0.05	0.06	0.05
CTV	0.6	0.7	0.6	0.6	0.6	0.7	0.5
MMDS	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Broadband/ IPTV	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DTH	-	0.4	0.4	0.4	0.1	0.1	0.2
Total	2.63	2.44	2.65	2.35	2.35	2.46	2.35

A total investment of Rs 17.2 billion is foreseen to be made in electronic media from 2008-09 to 2014-15

7.8 Electronic Media Revenues

7.8.1 CTV Revenue Projections

Electronic Media can be broadly divided into two parts namely the broadcasters and the distributors. Terrestrial TV stations, satellite TV channels, FM radio stations are in the broadcasters category. The revenue of these outlets depends on advertisements, spot sale, sponsorship programmes, airtime sales and content sale etc. Broadcasters are now increasingly begun to receive subscription revenues as well from distributors. Such an arrangement has not become a significant source for Pakistan broadcasters yet. However for foreign

satellite TV channel who have landing rights in Pakistan, subscription revenue is major source of their income. The distributors include cable TV operators, MMDS Operators, IPTV operators, DTH service providers etc; Major source of their revenue is subscription revenue which they receive from the subscribers on monthly or periodical basis. More recently advertisement revenue has emerged as a big source of revenue for CTV and other such service licenses.

In this section effort has been made to project the revenue stream of electronic media in Pakistan.

(1) Satellite TV revenues. Television Ad Spent represents TV revenues and projection of Ad Spent for the coming years represents revenue estimates for future. Source of revenue other than Ad spent are not significant at the moment except TV license fee which PTV is receiving.

Table-7.22
Projections of TV revenue, Pakistan, 2008-09- 2014-15
(Based on GDP growth rate of 4 percent)

Years	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Ad Spend (Rupees Billion)	13.09	13.83	14.60	15.41	16.24	17.11	18.02

(2) FM Radio Stations. The radio Ad Spend figures represents the radio revenues as reproduced in Table7.23.

Table-7.23
Projections of FM Radio stations revenue, Pakistan, 2008-09 to 2014-15
(Based on GDP growth rate of 4 percent)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Ad Spend (Rupees Billion)	0.65	0.71	0.78	0.85	0.92	1.00	1.07

(3) Cable TV Revenue: The cable TV revenues are dealt with in the following paragraphs.

In the household survey respondents were asked question about monthly charges paid by them for CTV service. The survey data shows that:

a) 65 percent of CTV subscribers pay up to Rs.175 per month.

b) 35 percent of CTV subscribers pay about Rs.300 per month. This data translates into an average CTV subscription charge of Rs.220 per subscriber per month.

CTV revenue projections have therefore been worked out on the basis of subscription fee of Rs.220 per month. The projections of number of subscribers and revenue are given in Table-7.24.

Table-7.24
Number of CTV subscribers and revenue projections, Pakistan, 2009

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Number of CTV Subscribers (Million)	3.75	4.08	4.42	4.7	5	5.34	5.6
Revenue (Rupees Billion)	9.90	10.77	11.67	12.41	13.20	14.10	14.78

Source: TEACH

As stated earlier CTV service is also provided through broadband and new triple play services have been introduced by different telecommunication operators using IP based technology. The subscribers are charged on an average subscription fee of Rs.300 per month for this service. The subscription revenue projections for IPTV/Broadband service are given in Table 7.25

Table-7.25
Number of Broadband connections and Revenue projections, Pakistan 2009

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Broadband Connections (Millions)	0.25	0.32	0.42	0.62	0.85	1.10	1.40
Revenue (Rupees in Billions)	0.90	1.15	1.51	2.23	3.06	3.96	5.04

Source: TEACH

There were 222,000 MMDS subscribers in 2007-08. The MMDS operators charge a subscription fee of Rs.360 per month. The number of MMDS subscribers and related revenue projections are given in Table 7.26.

Table-7.26
Number of MMDS subscribers and revenue projections, Pakistan, 2009

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Number of MMDS Subscribers	237,700	254,000	272,200	291,000	311,600	333,400	356,800
Revenue (Rupees in Billion)	1.03	1.10	1.17	1.26	1.35	1.44	1.54

Source: TEACH

7.8.2 Dish Antenna

Business survey data indicates about 5 percent of households are making use of DTH. The province wise survey data shows that this service is being made use of in all the provinces and AJK. However, a counter check indicates that there is some misunderstanding and DTH is a misnomer for simple dish antenna. Direct reception from satellite through a dish antenna has been quite popular in Pakistan for a long time. Some households use dish antenna to watch foreign TV channels available through different satellites hovering above the South Asian region. However, most of the subscribers install dish antennas if conventional cable TV

service is not available in their area of residence. The dish antenna with decoder equipment costs as little as Rs. 5,000 and is therefore affordable. Survey data reveals 19.3 percent of households in rural area use dish antennas as against 2.9 percent in urban areas.

Coming back to actual DTH, it is expected that PEMRA will take a final decision about the licenses in not too distant a future. The DTH forecast has therefore been worked out on basis of 3 licenses. The projections in respect of number of DTH subscribers and related revenue have been worked out. Table-7.27 shows the projection of DTH subscribers and revenue till year 2015.

Table-7.27
Projections of DTH subscribers and investment, Pakistan, 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Subscribers	0	10,000	30,000	60,000	90,000	120,000	150,000
Annual Revenue (Rupees in Million)	0	50.0	150.0	300.0	450.0	600.0	750.0

Source-TEACH

Methodology
The forecast has been prepared based on three DTH operators each launching service in 2009/10, 2010/11 and 2011/12 with 10,000 subscriber added each year for each operator. Based on market comparison with MMDS the charges per subscriber are estimated around Rs 5000 per year.

As for as dish antenna reception is concerned it is being fabricated locally and sold at a very reasonable price which is affordable. Price of monthly decoder card is within reach of common man. It is expected to continue to expand even if CTV, triple play services, MMDS and DTH services extend their coverage. Dish antenna will remain popular with deprived area residents and individuals who are fond of foreign TV channels.

The overall revenue projections in respect of electronic media services available in Pakistan is presented in Table 7.28

Table-7.28
Electronic Media Revenue Projections, Pakistan, 2008-09 to 2014-15

(Rupees Billion)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Satellite TV channels	13.09	13.83	14.60	15.41	16.24	17.11	18.02
FM Radio stations	0.65	0.71	0.78	0.85	0.92	1.0	1.07
CTV network	9.90	10.80	11.67	12.41	13.20	14.10	14.78
MMDS service	1.03	1.10	1.17	1.26	1.35	1.44	1.54
Broadband / IPTV service	0.90	1.15	1.51	2.23	3.06	3.96	5.04
DTH service	-	0.05	0.15	0.30	0.45	0.60	0.75
Total	25.57	27.64	29.88	32.46	35.22	38.21	41.20

Source-TEACH

Note: Dish antenna service is not provided by any operator. The decoder equipment is easily available in the market. No revenue stream is involved

7.9 Landing Right TV Channels

Another type of subscription is a source of income for satellite TV channels which have landing right licenses. The TV channels are carried / distributed by CTV operators in lieu of a charge. In the current regime, landing right channels get paid by the CTV operators on per subscriber basis. Local satellite TV channels are not being paid by the CTV operators. In fact many new satellite TV channels pay to CTV operators for distributing their channel. However in future, after electronic media industry overcomes the euphoria and is able to establish proper market traditions and ethics, popular channels will have to charge the CTV companies for carrying their broadcasts as is being done by assigned foreign TV channels. According to PEMRA the number of licenses for satellite TV channels landing rights in Pakistan is 12 which own 28 channels out of which 21 TV channels are operational in Pakistan. Generally CTV operator does not carry more than ten of these channels. According to a PEMRA determination order subscription charge payable to landing right channel is Rs.2 per month per CTV subscriber. Big broadcasters like Star also sell their channels on the basis of a bouquet which consists of 4 to 6 channels. For the purpose of estimation of subscription revenue of landing rights channel number of foreign TV channels carried by CTV operator has been taken as 10.

Present subscription system in force is not free from snags. All cable TV operators have not become part of the system and many of them are carrying foreign TV channels without even paying subscription charges. There are also disputes about number of subscribers on the basis of which payment is to be worked out. Then there are cases of satellite TV channels which are being distributed without having landing rights. Resultantly there is difficulty in estimation of revenue figure. Any exercise also requires an assumption about the percentage of recovery on this account. Efforts have been made to estimate a figure on the basis of 30 percent recovery as recovery rate of charges shown in the Table-7.29.

In the coming years number of landing right channels will increase and local satellite TV channels will also be able to get an income from such arrangements. PEMRA needs to build a consensus on the issue so that income from this source is assured for the development of media industry.

Table-7.29
Landing Rights Channels subscription revenue projections, Pakistan
2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Number of CTV Subscribers (Million)	3.75	4.08	4.42	4.70	5.00	5.34	5.60
Subscription Revenue (Rupees Billion)	0.27	0.29	0.32	0.34	0.36	0.38	0.40
Number of Broadband / IPTV Subscribers (Million)	0.25	0.32	0.42	0.62	0.85	1.10	1.40
Broadband Subscription Revenue (Rupees Billion)	0.06	0.08	0.10	0.15	0.20	0.26	0.34
Number of MMDS Subscribers (Million)	0.24	0.25	0.27	0.29	0.31	0.33	0.36
MMDS Subscription Revenue (Rupees Billion)	0.06	0.06	0.07	0.07	0.07	0.08	0.09
Number of DTH Subscribers (Million)	0.00	0.01	0.03	0.06	0.09	0.12	0.15
DTH Subscription Revenue (Rupees Billion)	0.00	0.00	0.01	0.01	0.02	0.03	0.04
Total Subscription Revenue (Rupees Billion)	0.39	0.43	0.49	0.57	0.66	0.76	0.86

Methodology

Following assumptions have been made for estimation of satellite TV channel landing rights subscription revenues:

1. CTV service

Annual subscription revenue = 24 x N x R x S

Where

N - Average number of Landing Right TV channels carried by operators =10

R - Recovery percentage = 30

S - Charge per subscriber per TV channel per year = Rs 24

Rs.2.0 per channel per month has been taken from PEMRA Determination document 2003

.

2. MMDS/Broadband/DTH service

Annual subscription revenue of Landing Right Channels of MMDS / Broadband / DTH service has been calculated in the following manner:

Annual subscription service = 24 x M x N

24XMX10=240XM

M = Number of MMDS subscribers

N = Number of Landing Right channels included in transmission-10

Recovery percentage = Full

Charge per satellite TV channel per year – Rs 24

As already stated subscription revenue of Landing Rights channels is shown separately but has not been added in total electronic media revenue as it is part of CTV revenue. It, however, represents an additional source of finances for satellite TV channel owners. In future local TV channels can draw upon this source of revenue.

7.10 TV Sets and Viewership Forecast

Pakistan Economic survey 2007-2008 data gives a figure of 9 million TV sets in the year 2007. Pakistan Electronic Manufacturers Associations has reported manufacturing of 0.95 to 1.00 million sets per year. In the business survey retailers reported that 35 percent of TV sets sold by them cost less than Rs. 5,000 per set. These low cost TV sets are not manufactured by local industry. It is reported that such TV sets are either imported through informal channels. Some quantity is integrated by informal manufacturing sector using second hand computer monitors and printed circuit assemblies.

In the light of this data it is estimated that about 1.35 million TV sets are added in the households every year. Projections about number of TV sets have been prepared and are given in the Table-7.30. The table also shows population figures for future years as predicted by NIPS Islamabad.

Table-7.30
Population Projections and Number of TV Sets, Pakistan, 2008/09-2014/15

(Million)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Population	163.30	165.90	168.60	171.30	174.73	178.22	181.78
TV Sets	10.8	12.08	13.37	14.65	15.93	17.21	18.50

Source: TEACH

The various characteristics of TV viewers has been highlighted from the Household survey findings in Chapter 3. The TV viewership projections are given in Table 7.31.

The above mentioned figures of number of TV sets form the basis for preparing viewership estimate. Household survey data outcome shows a mean figure of 6.8 persons and 1.2 TV sets per household. The number of viewers per TV set comes out to be 6.8/1.2 = 5.6. Using this ratio, viewership has been calculated on yearly basis and is shown in Table-7.31.

Table-7.31
TV viewership projections, Pakistan, 2008-09 to 2014-15

(Million)

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Viewership	61.6	68.86	76.21	83.51	90.80	98.10	105.45

Source: TEACH

Note:

a. According to a random check by TEACH eight percent of transport buses carry TV sets. With a fleet of 134,000 buses in the country at least 100 persons are exposed to TV broadcast in each bus daily. A total of about one million viewers are estimated to benefit from such a facility.

b. There are thousands of eating places, restaurants, hotels and other public places where TV is watched.
c. A sizeable percentage of shops and offices have facility to watch TV occasionally.
d. A small percentage of viewers utilize computer monitors and mobile phone handsets to watch TV programs. Such viewers are not yet in substantial number.

The data about such places of viewership is hard to estimate and it is not included in estimates. In the absence of universal countrywide electricity supply the expansion in TV viewership is limited.

Box-7.2
Rural-Urban Variation

1. Seventy six percent urban respondents reported watching TV frequently as compared to 73 percent rural respondents.
2. Fifty five percent rural respondents reported receiving less than fifty of TV channels on Cable TV as compared to urban respondents (twenty eight percent).
3. Sixty five percent of rural respondents reported to listen radio as compared to seventy one percent urban respondents.
4. Nineteen percent urban respondents reported to listen to radio in the car as compared to ten percent rural respondents. On the other hand twenty percent rural respondents reported listening to radio at business place as compared to fourteen percent urban respondents.

7.11 Radio Listenership/Reach Forecast

According to survey mean value of number of persons per household is 6.8 on country wide basis. The survey data also shows that seventy one percent of households listen FM radio broadcasts, available data about number of household indicate 22 million households in the country. The radio listenership comes to 22x6.8x0.7=104.7 million.

According to Statistics Division, Government of Pakistan ICT indicators ninety two percent of population is covered by Radio broadcast's in Pakistan. Radio receiver sets are now common commodity. Apart from desk type, there are pocket radios, Cassette recorder usually include a radio. Modern mobile phone handsets now incorporate a FM radio broadcast receiver. IN PTA survey 35 percent of mobile users reported use of such radio receivers. Number of mobile phone is 90 million which means 31.5 million persons have access to Radio broadcasts at individual level and every year 3.15 million more will get access as mobile phone number increases. According to Pakistan urban Radio establishment and listenership survey seventy seven percent working men listen to Radio after office work. According to TEACH survey, about 19 percent respondents listen to radio even at office and work place.

Younger generation also tunes into Radio via internet. There are 3.0 million internet connections in the country, though not all of them are regular radio listeners. There are about 3 million automobile vehicles, majority of which has a fitted radio receiver. Drivers make use of this radio during travel for self as well as for the passengers.

It is quite common for the laborers to listen to radio at work. Even farmers and other users of tractor and trolleys are fervent radio listeners. Security guards and chowkidars at night like radio listening while on duty. It can be surmised that radio listenership is quite popular.

As the population grows, the mobile phone and internet penetration increases radio listenership will also increase. There is no limitation like lack of electric connection in matter of radio as most receivers operate with a battery. Taking into account the 35 percent of mobile phones and addition in internet user etc. the radio listenership has been projected till year 2015 and is given in Table-7.32.

Table- 7.32
Radio Listenership projections, Pakistan, 2008-09 to 2014-15

(Million)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Listenership	110.9	114.4	117.3	120.4	123.5	126.7	129.8

Source-TEACH

Here it looks appropriate to mention that in Indonesia which is a country with similarities to Pakistan and has made appreciable progress in the field of electronic media, radio lisnership/reach is reported as 56 percent.

Box-7.3

Gender Tilt

Household survey about TV viewership and Radio listenership brings out note worthy gender related findings:

1. Seventy seven percent female listen to Radio as compared to 69 percent males.
2. Eighty four percent females reported to watch TV regularly as compared to 75 percent males.
3. Less percentage of female (37 percent) reported watching TV in regional languages as compared to males (60 percent).
4. Larger percentage of females (80 percent) reported to watch advertisement on TV as compared to males (69 percent).

The characteristics of radio listenership/reach has also been discussed in Chapter-2 of Volume-II.

7.12 Employment

The employment in the electronic media comprises of direct, indirect and induced employment. The direct employment means regular jobs created for running Satellite TV channels, Radio stations and Cable TV stations and other related set ups. The indirect employment relates to jobs in organizations dealing with electronic media goods and service suppliers such as TV set manufacturers, sellers and retailers, electronic media equipment vendors, programme production houses, advertisement agencies and others. Induced employment relates to work opportunities created at the tertiary level such as in establishments like repair shops, printers, publishers, card sellers, script writers, transporters, installers and in other support industry.

7.12 Current Employment

7.12.1 Direct employment

Direct employment means regular jobs created for running Satellite TV channels, FM Radio stations and Cable TV stations. The direct employment in the electronic media sector comprises of around 41,025. It is based on the findings of business survey, FGD and stakeholder information. Detail is given as under:

1. Fifty six Satellite TV channels are working in the country out of which three are operated by PTV. The number of employees in PTV is reported about six thousand. Rest of the 53 TV channels is of different categories. News and current affair TV channels employ on an average 225 professionals and other personnel as reported in discussion with stakeholders. Similar figure about specialized Satellite TV channels is 150 persons. The mixed programme Satellite TV channels have staff strength in the middle of the two figures. Business survey shows an average number of staff with TV licensees as about 130, increasing to 230 in one year of performance. The average which works out to 180. Present strength of direct employment in 53 satellite channels on this basis is estimated to be 9540.

2. In 2007-08, there were 108 FM Radio stations working in the country. Some stations are located in major cities and have staff strength like 65 employees on average. Medium size city FM Radio stations report about 40 employees. Very small stations carry operation with as little as 15 persons. The number of smaller stations is quite large. Average employment per FM Radio station has been taken as 25 after discussion with FM Radio station operators and it is estimated that 2700 persons are employed in this sector.

3. There are 2224 CTV operators with 3.42 million CTV subscribers. According to discussions with CTV operators, they employed on an average one person for 200 connections. The current employment in CTV works out to be 17,100 persons.

4. MMDS service is operating in 5 cities. Each MMDS operator currently on an average employs one person for 450 connections. With 222,000 connections in 2008, the staff strength is estimated about 500 persons.

5. The same yardstick has been adopted for the Broadband/IPTV service employment projections as in case of MMDS. PTCL and Wateen Telecom will be the two prominent IPTV service providers in the coming years. With total broadband connections of 260,000 in 2008, the current direct employment in this area is estimated as 560 persons.

6. According to PEMRA there are 12 landing right licensees which are operating in the country. Based on the information collected during business survey 500 employees are estimated as working with these licensees.

7. Pakistan Broadcasting Corporation (PBC) and Pakistan Television (PTV) are working in the public sector. These organizations have on their roll 4,000 and 6,000 employees respectively. In view of emphasis on private sector in electronic media, no substantial increase in jobs is foreseen in PBC and PTV.

7.12.2 Indirect employment

The indirect employment in the sector constituted around 112,000 employees in year 2008. The indirect employment estimation is based on the findings of business survey and FGD discussions. The figure of indirect employment is based on the following criteria:

1. It is estimated that there are around 30,000 retailers / sellers in the country who sell TV sets, radios, dish antennas, decoders and amplifiers etc. This has been based on a survey carried out in a medium size urban city with medium level of commerce and trade activity. It was reported that there were 32 shops dealing with the electronic media goods. Some of these sell other electronic products as well. Average employment of 3 persons per shop has been assumed in these outlets.

2. Equipment vendors who sell imported TV and radio broadcasting equipment, transmitters, professional cameras and digital CTV transmission equipment including headends etc. are reported to be around 40. Each employs on an average 25 persons including support staff. One thousand persons are employed in this business

3. There are 126 advertisement agencies accredited to APNS. Some of them are large organizations. Business survey reveals that on an average 69 employees are working in each of the advertising agency which also deal with the print media, and outdoor advertisement etc. As far as electronic media is concerned, it is assumed that 30 persons are working for TV and radio business in each agency giving a total of 3780 employees.

4. There are 17 media selling and production houses, each employing 25 person on the average so there is employment of 425 in this business.

5. There are seven media Research and Monitoring .agencies out of which four are active. The estimated employment with them is reported as 140.

6. There are 17 media representatives for satellite channels with an employment of about 170 persons.

7. Thirty one TV commercial producers /sound studios and 19 private TV production companies functioning in the market with average of 50 persons per company, employment is estimated as 2500.

8. There are 16 TV set manufacturing units which are members of the Pakistan Electronic Manufacturers Association in the country. The business survey reported that on an average 275 persons have been employed per unit for TV manufacturers. There is also informal manufacturer sector dealing with electronic media equipment. Making provision for informal sector, it has been estimated that there are 6000 employees in the manufacturing sector in the country.

7.12.3 Induced Employment

As regards induced employment, the figures are difficult to estimate. However, in the sister sector of telecommunication internationally a multiplication factor of 1.5 to 1.6 is used to calculate the induced employment from total of the direct and indirect employment. As telecommunication and electronic media are both part of Information Communication Technology (ICT), it may be assumed that the same multiplication factor applies for both sectors. On the basis of factor of 1.6, the induced employment is estimated to be around 240,000 persons in the country.

7.13 Employment Projections

7.13.1 Direct Employment Projections

Direct employment projections have been based on the future growth of Satellite TV channels, FM Radio stations, Cable TV stations and other facilities.

The basis of forecast has been discussed in detail in paragraphs 7.12.1. The direct employment projections are given in Table-7.33.

Table-7.33
Direct Employment Projections, Pakistan, 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Satellite TV	9,950	10,800	11,800	12,650	13,400	14,450	15,500
FM Radio	2,900	3,145	3,420	3,710	4,000	4,290	4,595
CTV	18,750	20,400	22,100	23,500	25,000	26,700	28,000
MMDS	500	520	540	560	580	590	600
Broadband/IPTV	700	735	772	810	851	893	938
Landing Rights	525	525	525	525	525	525	525
Pakistan Broadcasting Corp	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Pakistan Television Corp	6,000	6,000	6,000	6,000	6,000	6,000	6,000
DTH	-	300	300	300	300	300	300
Total	43,325	46,425	49,457	52,055	54,656	57,748	60,458

By year 2015, the number of Satellite TV channels is projected to increase to 83. The number of FM stations is expected to increase from 108 to 192 as explained earlier. The number of subscribers of CTV, MMDS and Broadband/IPTV is projected to increase to 5.6 million, 0.36 millions and 1.4 million respectively as given in Table 7.23 above. The strength of employees in Satellite TV, FM Radio, CTV operator, MMDS and Broadband sectors has been projected commensurately. Table 7.33 shows yearly projection of direct employment till year 2014-15.

These projections have been estimated after discussion with the stake holders who are operating the electronic media services. The figures collected in the business survey and Focus Group Discussion (FGD) has also been used.

7.13.2 Indirect Employment Projections

As the number of media outlets increase over time, the business of media industry players at secondary level will also increase by the same proportion generating more employment opportunities. Indirect employment projections have been based on the information collected during business survey from different stakeholders as has been explained in paragraph 7.12.2. The indirect employment projections are given in Table-7.34.

Table-7.34
Indirect Employment Projections, Pakistan, 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Manufacturers of Equipment	5,750	6,000	6,200	6,300	6,500	6,600	6,750
Dealers / Retailers	98,000	100,000	102,000	104,000	106,000	108,000	110,000
Equipment Vendors	1,000	1,020	1,030	1,050	1,060	1,075	1,090
Media Selling and Production Houses	425	446	469	492	517	542	570
Advertisement agencies	3,780	3,850	4,000	4,175	4,350	4,540	4,725
Media Research and Monitoring Agencies	160	165	170	175	180	185	190
Media representative for Satellite channels	170	175	180	185	190	195	200
TV Commercial Producers / Sound Studios	1550	1650	1750	1850	1950	2040	2125
Private TV Production Companies	950	1,010	1,070	1,130	1,200	1,270	1,350
Total	111,785	114,316	116,869	119,357	121,947	124,447	127,000

7.13.3 Induced Employment Projections

The induced employment in the economy needs to be taken into account for a complete assessment of the employment creation in this economy. As a result of developments in the Satellite TV channels and FM Radio stations and CTV stations, more jobs will be created at tertiary level called induced employment.

Induced employment has been projected by applying multiplying factor of 1.6 to the sum of direct and indirect employment and is shown in Table-7.35.

Table-7.35
Induced employment projections, Pakistan, 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Direct employment	43,325	46,425	49,457	52,055	54,656	57,748	60,458
Indirect employment	111,785	114,316	116,869	119,357	121,947	124,447	127,000
Total of direct and indirect employment	155,110	160,741	166,326	171,412	176,603	182,195	187,458
Induced employment	248,176	257,185	266,122	274,259	282565	291,512	299,933

The sum of direct, indirect and induced jobs created yields figures of total employment which has been given on yearly basis till 2015 in Table-7.36.

Table-7.36
Total electronic media employment projections, Pakistan, 2008-09 to 2014-15

Item	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Total Employment in Electronic media	403,286	417,926	432,448	445,671	459,168	473,707	487,391

Although there is a demand for local area TV stations as revealed in the survey, employment projections for the same are not being included because it is not certain when a policy decision of government will be taken to allow such TV stations.

7.14 Indicators and regional comparison:

The discussion in this chapter cannot be complete without looking at the electronic media industry performance in comparison with other countries. Table- 7.37 gives at a glance electronic media revenue for the year 2007-08 in Pakistan under head of advertisement revenue, subscription revenue and TV sets license fee revenue. The Table 7.37 shows electronic media industry revenue on per capita basis. To facilitate analysis of the market and its future potential comparison with the situation in China and India seems appropriate as significant progress has been made by them in the last decade. Components of revenues have been given about China and India in comparison with Pakistan. Indicators such as per capita revenue and revenue - GDP ratio of the three countries have been compared.

Table-7.37
Total electronic media industry revenue, Pakistan, 2007-08

		Rupees Billions	
a	**Advertisement Revenue**		
	1.TV Channels	11.91	
	2. Radio Stations	0.61	
	3. Cable TV*	1.80	
			14.32
b	**Subscription Revenue**		
	1. Cable TV Service	9.03	
	2. MMDS Service	0.96	
	3. Broadband Service	0.86	
			10.85
c	**TV Sets License Fee Revenue**		
	1. Fee collected through WAPDA	2.00	**2.00**
	Grand Total		**27.17**
d	**Per Capita Electronic Media Industry Revenue****		Rs.169
		i.e.	US$2.11
		i.e.	£1.41

* Estimated. **Population 160.9 millions

Table 7.38 indicates the comparative position about revenue components and other items for the regional countries.

Table-7.38
Electronic Media Industry regional comparison, Pakistan, 2007-08

S/N	Item	China	India	Pakistan
1.	Per Capita Industry Revenue	£3.80	£2.60	£1.41
2.	TV Revenue as percentage of GDP	0.59	0.33	0.24
3.	Components of Revenue			
	i).Advertisement	52	34	53
	ii).Subscription Revenue	48	66	40
	iii).Others e.g. License Fee	Nil	Nil	7
4.	Radio advertisement-Ad Spend Ratio (percent)	2.0	5.3	2.4

Above picture adequately brings out that there is need for more investment in Electronic Media industry in Pakistan.

Note: TV set licenses fee revenue and advertisement revenue earned by Cable TV has not been included in Ad Spend tables.

Chapter 8

Conclusions and Recommendations

8.1 Conclusions

1. The size of the market for the advertisement budget is currently of decent size as a consequence of substantial growth in it after deregulation of the electronic media and the establishment of PEMRA. There are indications that there is large potential for further growth in the market. There is an association between GDP growth and number of satellite TV channels. Based on GDP growth of 4 percent for next seven years 83 Satellite TV channels can sustain.

2. The respondents of the survey were found to be generally satisfied about the usefulness of the programmes being broadcast by different Satellite TV channels especially in areas of news/current affairs, general knowledge, sports, religion, entertainment, cooking and education. The female respondents expressed appreciation and usefulness of TV channels broadcasting programmes in areas of general knowledge, sports, food and education.

3. The respondents had indicated in the survey their desire that authorities add additional Pakistani TV channels.

4. About half of the respondent had indicated their preferences to watch TV programmes in the regional languages.

5. A vast majority of respondents had desired that there should be additional local area TV channels focusing on local issues and problems. More than half of the respondents wanted such channels to be in Urdu language. A majority of the respondents want such channels through CTV.

6. Seventy percent of respondents reported that often watched TV advertisements. About half of them were satisfied with the standards employed in advertisement. A significant proportion watching advertisements found the duration of advertisement excessive (22%), lacking objectivity (18%), vulgar (18%) and indecent (13%).

7. Ranking of favourite TV channels being watched by the respondents are for the channels broadcasting news, drama, music, movie, sports and religious subjects.

8. The respondents expressing need for additional satellite TV channels found in attractive areas relating to news, religion, drama, music, movie, sports and geography, education and animal world. The ranking of additional TV channels following the ranking given above. Many people like to see additional English language channels.

9. Only a quarter of the respondents want added more regional language/TV channel.

10. About half of the respondents reported that they watch TV programmes in regional languages. Only a quarter of respondents reported that more regional language/TV channels should be added.

11. The respondents by vast majority indicated the need for setting up local TV channels to highlight local problems and issues. More than half of them want such channels to be in Urdu language.

12. Cable TV penetration is continuing to expand and modernize along with the increase in the percentage of households with television sets. In the coming days, triple play services will become more popular and telecommunication operators like PTCL will become major players in video distribution.

13. The concept of subscription revenue for the TV channels will take root slowly. PEMRA should remain firm in its resolve to implement this regime. Such subscription revenues will provide additional source of income for the TV channels.

14. Seventy one percent of respondents reported listening to radio. Regarding the time of listenership forty percent of respondents do not prefer for specific time for radio listening while 37 percent of them had reported late night as time of listening to radio. Equal number of respondents reported to listen to radio programme in the morning and in the afternoon. Lowest proportion of respondents reported listening in the afternoon. Most of the respondents listen to radio when they are in the house. Popular language for radio listening is reported as Urdu. Twenty five percent of respondents informed that they do not have radio set. Seventy percent of respondents have reported possessing one radio set. Popular programmes liked by radio listeners are those relating to music, news, current affairs, religion, sports and comedy.

15. Respondents find radio broadcasts useful for news, general knowledge, entertainment, sports, religion, weather information, cooking and travel.

16. Regarding advertisement on radio more than half of respondents found contents of advertisement suffering from lack of objectivity, being cause of diverting attention from main programmes and too noisy. Majority of respondents thought that the quality of DJ was decent. Only ten percent of respondents considered the content as vulgar. Like Satellite TV channels, there is an association between GDP growth and number of FM Radio stations. Based on 4 percent GDP growth number of sustainable FM Radio stations by year 2014-15 will be 192.

17. Respondents find radio broadcasts useful for news, general knowledge, entertainment, sports, religion, weather information, cooking and travel.

18. About advertisements on radio, more than half respondents reported that those are suffering from lack of objectivity, are a cause of diverting attention from main programmes and are too noisy. Majority of the respondents reported that the quality of DJ is decent. Only ten percent considered it vulgar.

19. The respondents have reported in favour of additional TV channels especially for the news, dramas, current affairs, music, movie, sports, geography, education and animal world and religion. The amount of Ad Spend projected has the necessary capacity to provide share of income to run additional TV channels.

20. Ad Spend will also have sufficient income to support additional radio stations. The private FM radio stations set up even in small towns are contributing to public entertainment with music and talk shows and their operations are profitable. Additional FM radio stations can easily sustain with profitability and should be licensed. FM radio station provides an economic way of marketing their product of channel small businesses and will be source of promotion of trade and commerce.

21. The TV viewership and radio listenership in Pakistan has increased over the years and will further enhance as TV and FM radio broadcast reception expands through internet / computers and mobile phone handsets and other new gadgets.

8.2 Recommendations

1. Since broadcast is based on various technologies and typical processes, it is recommended that separate licenses be issued for Broadcasters, Re-broadcasters and distributors keeping in view the technological progress and future environment. In principal, the licenses should be technology neutral. The broadcaster may be primary or secondary depending on the nature of operation. The distributors may be divided into two categories i.e. Pre-recorded program distributors and Live program distributors. Pre-recorded Program distributors may further be divided into categories i.e. CD/DVD shop and VoD. Broadcasters of full program and footage may be treated differently. Cost of the program, royalty, copy right, censor, code of ethics etc may be taken into consideration while framing the license.

2. The efficacy of regulatory enforcement depends on the extent to which the regulations can be enforced on the ground. This is also crucial for the cable TV industry in view of technological advancements, convergence, increasing capability to provide various contents and applications. The large number of cable TV operators and consumers spread all over the country provide a strategic significance to cable TV from other platforms capable to provide similar services.

Therefore rules and regulations be reviewed keeping in view the changing scenario due to technological evolution, convergence, type of contents, future scope and other interactive applications.

3. There are no details in the Regulations about the requirement relating to the financial strength, educational qualification, technical knowledge or experience to run such services. As a result any person can apply for the license and can start providing cable TV services. In a fast changing technological scenario particularly growing convergence, the competition and efficiency issues are super most for survival. This not only requires much higher investments to compete but also better technological knowledge and experience to run such services. Therefore financial and technical background of the entity seeking license is quite relevant. Without proper eligibility criteria of cable TV operator, quality of service may not improve. Such operators may not be in a position to upgrade their networks to provide newer services, which are fast emerging due to advancement of technology. In the era of convergence, operators from other domains are also entering into broadcasting arena and in such a scenario cable TV operators need to gear up to sustain their business. Therefore eligibility criteria need revision.

4. A cable TV operator should be free to structure his business model/ network plan in a competitive environment for his survival and may not be compelled for approval of the same from the Authority.

5. Quality of Service (QoS) is an important aspect. Quality of Service means ensuring certain level of service for the existing customers. It covers various aspects such as quality of reception, billing accuracy, avoiding unnecessary changes in placement of channels, clarity about value added services etc. The Authority should facilitate availability of new value added services and their applications to customers and ensure QoS, redressing cable TV operator's grievance at the same time.

6. Criteria for evaluating license application for the grant of a license are namely: i- economic viability; ii- technical competence; iii- financial capability; iv- credibility and track record; v - extent of Pakistani share in ownership. There is no provision for the verification of the documents of cable TV operators who is seeking license. In the absence of such verification any person can become cable TV operator without verification of his antecedents. Even defaulters can get license in new name and start operations as there is no such check. A mechanism needs to be developed for granting license to genuine applicants only.

7. Supervisory guidance and positive control may result in systematic and planned growth. The cable TV sector in its present form is subject to loose control. Even the exact number and location of all the cable TV operators seems not readily available. Therefore arrangements should be made in this respect to check fake and unauthorized operators.

8. The collection of relevant information/ data is significant for keeping track of the development. As far as cable TV industry is concerned there seems no centralized nodal authority where all the information relating to the development of the sector is collected and made available. The cable TV operators should be brought under compulsory reporting obligations to a specified nodal point announced by the Authority at regular intervals. Such data collected at regional level can be compiled to arrive at consolidated national figures. Cable TV operators may be adequately informed about this mandatory requirement under license. The data collection process at the Cable TV operator level should be simple considering their vast spread. Web based data collection can be another alternative.

9. There is also a need to have explicit provisions about the customers' rights including the re-dressal of consumer grievances. There are complaints that consumers do not get good quality of signals.

10. DTH is a good alternative of Cable TV due to CTV's knotty issues and quality of service, therefore, promotion of DTH must be encouraged. Since Channels are digital, broadcast quality would be high. However, religious parties and NGOs should never be allowed to provide this service to avoid promotion of sectarianism, hatred among various religious groups and international agendas to mislead the nation for vested interests abroad. This will also solve the censor issues as PEMRA may allow only those channels which would be clean in all respects or may be receivable by the viewers after getting deleted objectionable content at DTH premises. The service is quite useful for promotion of religion, education, culture, health, agriculture, business, industry, sports, and matters relating to emergency, whether, women, children, shopping, etc. due to its vast coverage and high quality. Channels may be fixed for this purpose.

11. In view of continuously reducing cost of bandwidth, emphasis be given to promote IPTV as it may offer far wider choice as compared to terrestrial retransmission, cable network and even DTH. IPTV allows the users to access any of the channels available on Internet. The access may be global via Internet. IPTV can offer Video on Demand as well which will be a great attraction for the viewers. IPTV may also help in eliminating the piracy in respect of foreign films as genuine films will be available at a nominal price through IPTV.

12. To avoid messing of cable TV networks in the same areas, it seems appropriate to issue licenses for defined areas to a single party only. QoS may be checked and subscription fee may be capped by PEMRA under license conditions. This will not only be beneficial for operators but also would help administrations to keep the environment in tidy condition.

13. It is almost impossible to know number of subscribers of a cable TV service as concerned operators avoid disclosing such information for saving royalty payments. Therefore royalty payment to PEMRA should be abolished. Instead

renewal fee may be reasonably enhanced to meet the regulatory expenses. The enhancement in renewal fee may be determined taking into account density of population in the area, economic status of the community, the capacity of operator's infrastructure and average number of subscriber for such networks. It will be convenient for the Authority as well as the operator. This will resolve the FBR's tax problems as well.

14. Radio and TV provide latest information at bearable cost to a large number of people almost instantly. To meet the needs of the people, PEMRA may ask Radio Pakistan and PTV to set up non commercial radio and TV stations at least at city levels irrespective of cities are small or big. For smaller areas, the bandwidth on FM permits 5000 low power radio transmitters. FM gives better broadcast quality and may serve communities with a large variety of programmes. TV stations, however, may be setup at city level keeping in view the infrastructure and operational cost. If not feasible, it may be located at a suitable place from where it may serve several small cities adjoining the proposed place. Efforts may also be made to get merged the Radio and TV organizations to have substantial savings in operational cost due to common control for operation and maintenance and having shared premises and equipment. Keeping in view the provisions in the Ordinance, PEMRA may order Radio Pakistan and PTV to setup Radio and TV stations at city level as early as possible to improve the access of the people to mass media at the local and community level so that free flow of information may be optimized. It will also help in creating/ developing contents locally.

15. Digital Television has been introduced in many countries. Pakistan should also adopt digital techniques for radio and TV transmission. This process may be interesting for young listeners/ viewers as digital radio may transmit data of various types for computers such as high quality videos and music. The data transmission and normal radio broadcast may run in parallel. Renowned manufacturers may be invited for production of digital radio and TV sets in Pakistan.

16. PEMRA may require under license condition that all the broadcasts made by radio and TV should be recorded/ archived for availability of contents as and when required. Further, PEMRA may issue licenses to interested parties that undertake to supply digitized content on demand through their websites.

17. Radio and TV in Pakistan are not enjoying the benefits of Internet which can help them not only to communicate with the Audience but also to expand their market. Their websites also need improvement as sufficient information is not available there. Every radio and TV channel should be available on Internet since broadband through cable, DSL and wireless is not expensive now and latest compression techniques have reduced video file size appreciably. It will be a great service for Pakistanis and others abroad. PEMRA may also specify standards for this purpose. Licensees may also be asked to set up their websites providing basic information about the respective channel. As computers are increasing in number, it would be easy to download information conveniently. It will also help in updating

the website information as and when required without any expenses and loss of time. The information may be provided in foreign, national and local languages as far as possible.

18. PEMRA should not allow Pakistan origin channels to uplink channels from abroad and should deny landing rights if they fail to act accordingly. This will help in regulating the Pakistani channels, having substantial investment and creating more jobs for Pakistanis.

19. Proposed local TV channels are recommended to be set up through PTV at district levels. Adequate capacity building efforts are needed at government level to make thee concepts a success. In the private sectors such TV channel are likely to move away from the objective due to commercial coordination. Moreover local politics rivalry and caste blocks can wield influence to nullify the achievement of the purpose and may rather become a source of stoking conflicts.

20. Pakistan radio broadcasters should be encouraged to make use of satellite broadcasting by leasing channels on existing satellite radio networks. Such an action will provide full radio coverage of Pakistan territory including remote areas.

21. TV broadcast / FM radio coverage in remote areas of Balochistan, FATA and Northern Areas etc. are lagging behind in access to media services. A strategy should be evolved on the lines of Universal Service Fund to extend these broadcast services to the deprived areas of Pakistan.

22. PEMRA can prescribe regulations so that all cable TV companies are registered with the SECP and provide annual accounts duly audited by accredited Chartered Accounts firms. This will improve the operation of the companies on the one hand and provide income to PEMRA and additional tax revenues to the government. To avoid creating of an impediment to entry in the market this regulation is recommended to be implemented in the 3rd year of operation of a company. New regulations should also provide for smaller number of categories of license. Preferably a separate law be framed for CTV regulation.

23. New regulations should provide for smaller number of categories of licensees. Preferably a separate law should be framed for CTV regulation because issues of broadcasting and distribution are distinctly different and require handling with different approach.

24. The manufacturing industry for electronic media terminal like TV sets and radio sets needs a substantial support. The informal channels of imports and grey market should be discouraged through suitable tax relief measures for the genuine industry.

Market Study on Satellite & Terrestrial TV Licensing and FM Radio Broadcasting

Volume-II

Pakistan Electronic Media Regulatory Authority

Telecom Engineering and Consultancy House (Pvt) Limited
Islamabad

Volume II

Contents

	Title	Page
Chapter-1	**Survey Methodology**	**1**
1.1	Methodology of the Survey	1
Chapter-2	**Targeted Survey and Findings (Household)**	**3**
2.1	Respondents Profile	3
2.2	Viewership of TV in the household	3
2.3	Ownership of TV and viewership	4
2.4	Cable TV Networking	5
2.5	Availability of TV Channels	6
2.6	Cable Network Fee	7
2.7	Regular TV watchers	7
2.8	Usually watched and favorite channels	7
2.9	Time and duration of watching TV programmes	9
2.10	Demand for additional Channels	11
2.11	Viewership of regional channels/programmes	12
2.12	Usefulness of CTV programs	14
2.13	Demands for Local Channels	16
2.14	Quality of Advertisements	19
2.15	FM Radio Broadcasting	20
2.16	Advertisements on FM Radio	24
Chapter-3	**Electronic Media Survey (Business)**	**26**
3.1	Introduction	26
3.2	TV Set Brand and Affordability	26
3.3	Media Advertising Companies	29
3.4	Programme Production Companies	30
3.5	Air Time Purchasers	30
3.6	TV Manufacturing Companies	30

List of Tables

			Page
Chapter-1		**Survey Methodology**	
	1.1	Breakdown of Sample	1
Chapter-2		**Targeted Survey and Findings (Household)**	
Chapter-3		**Electronic Media Survey (Business)**	
	3.1	Reason for revenue being not up to mark, Pakistan, 2009	27
	3.2	Affordability of Price for TV Sets, Pakistan, 2009	28
	3.3	Make of TV Sets, Pakistan, 2009	29
	3.4	Popular brand of TV Sets in household survey, Pakistan, 2009	29

List of Figures

Page

Chapter-2 Targeted Survey and Findings 9Household

2.1	Viewership of household by age and region, Pakistan 2009	4
2.2	TV Brand in use, Pakistan 2009	5
2.3	Type of Cable Television Network, Pakistan 2009	6
2.4	Availability of CTV Channels, Pakistan 2009	6
2.5	Percentage of respondents by amount of fee paid for CTV connections, Pakistan 2009	7
2.6	Channels usually watched by residents, Pakistan 2009	8
2.7	Channel usually watched by region, Pakistan 2009	8
2.8	Favourite TV Channel watched by region, Pakistan 2009	9
2.9	Favourite Channels watched by residence, Pakistan 2009	9
2.10	Timings of watching TV programmes, Pakistan 2009	10
2.11	Timing and duration of watching TV programmes, Pakistan 2009	10
2.12	Duration of watching TV programmes at night, Pakistan 2009	11
2.13	Percentage of respondents desiring additional Pakistan and foreign channels by province, Pakistan, 2009	12
2.14	Percentage of respondents who watch TV in regional languages by region and residence, Pakistan 2009	13
2.15	Percentage of TV watchers watching local TV channels by language of channels and region, Pakistan 2009	13
2.16	Percentage of respondents who watch TV languages and desire additional channels in local languages by residence, Pakistan 2009	14
2.17	Usefulness of Pakistan channels by residence, Pakistan 2009	15
2.18	Percentage of respondents expressing usefulness of Pakistan CTV channels by region, Pakistan 2009	15
2.19	Usefulness of Pakistan CTV programmes by gender, Pakistan 2009	16
2.20	Usefulness of Pakistan CTV programmes by level of education of respondents, Pakistan 2009	16
2.21	Percentage of respondents recommending local community channels to focus on local problems and issues by province, Pakistan 2009	17
2.22	Percentage of respondents who recommend local channels by language of channel and region, Pakistan 2009	17

2.23	Percentage of respondents who recommend local TV channels through CTV and terrestrial antenna, Pakistan, 2009	18
2.24	Percentage of respondents who are watching advertisements on TV and are satisfied with the quality / standard of advertisements, Pakistan, 2009	19
2.25	Percentage of respondents have complaints about the standard of advertisements, Pakistan, 2009	19
2.26	Percentage of respondents who listen FM radio by region, Pakistan, 2009	20
2.27	Percentage of respondents who listen to FM radio by place, Pakistan, 2009	21
2.28	Percentage of respondents who listen to FM radio by timing, Pakistan 2009	21
2.29	Percentage of respondents listening FM radio by language of the programme, Pakistan, 2009	22
2.30	Percentage of respondents by type of preferred channel / programme and by region, Pakistan, 2009	22
2.31	Percentage of respondents by type of most listened programme and residence, Pakistan, 2009	23
2.32	Percentage of respondents who consider FM radio programme useful for the family by region, Pakistan, 2009	23
2.33	Percentage of respondents by their views about the quality of advertisements on FM radio, Pakistan, 2009	24
2.34	Percentage of respondents by their opinion about DJs of the programme	25

List of Annexes

		Page
Annex-I	Major Occupational Codes	2
Annex-II	Districts of various Provinces/Region involved in the Survey	4
Annex-III	Household Questionnaire	5
Annex-IV	Business Questionnaire	12

List of Annex Tables

		Page
Chapter-2	**Annex Tables 2.1-2.69**	2-32

List of References

	Page
Volume-I & II	1-2

Chapter 1

Survey Methodology

In order to achieve the objectives of the Study, TEACH has been able to collect necessary information through micro, macro level and Focus Group Discussion analysis of the concerned stake holders. The micro level data has been collected through a survey covering all the provinces, AJ&K and Northern area representing rural and urban population. The Focus Group Discussion also helped to supplement and complement the micro level data. The macro level data is also used to further analyze to achieve the desired objectives of the Study.

1.1 Methodology of the survey

To achieve the objectives of the ToR, the study primarily focused on primary level data collected through a Survey. The sampling frame consisted of those households who had TV sets in their premises. The selection of sample took into consideration the representation of all the provinces, AJ&K and Northern area covering rural urban population of various Socio Economic Status (SES) of the sampled area.

The sampling experts preferred to select a purposive/convenience sample representing the rural-urban population of the country. The sample design is a multistage stratified/cluster sample of different categories of TV users representing rural-urban areas of all the four provinces and region with a wide spread inclusion of districts. The urban areas especially focused on major urban and other urban areas. The major urban areas comprise of big cities/capitals of the provinces. The other urban areas include small towns/cities.

The breakdown of the sample is shown in Table-1.1.

Table-1.1
Breakdown of Sample

Area	Percent
Punjab	47
Sindh	29
NWFP	15
Balochistan	5
AJK&FATA	4
Total	100

Source: TEACH Survey

The above selection of the Sample was planned with a view that the urban areas is to be over sampled in relation to rural distribution of population as the urban population is usually more heterogeneous than the rural population which is considered to be more homogeneous.

(i) Questionnaire Development, Pre-testing and Training

A questionnaire consisting of 43 questions covering questions related to TV and FM radio was designed according to the requirement and ToRs of the Study. Comments on questionnaire were invited from PEMRA. Discussion and meetings were also held to improve the questionnaire.

The enumerators were selected who had mostly Master's degree in Economics, Statistics and Social Sciences. Training workshop was organized for the enumerators and supervisors. Each question was explained to the participants to avoid confusion in interpretation of the questions. The pre-testing of questionnaire was carried out and in the light of pretests, the questionnaire was finalized.

A team of 33 enumerators and supervisors conducted the Survey in all the sampled areas of 46 districts of all the provinces, AJ&K and FATA. The list of districts covered is placed at Annex 2.1

(ii) Data Entry

The questionnaires were checked and edited in the field as well as in the office. The data entry was done by qualified data entry operators. Necessary editing was also carried out while entering the data for tabulation. The SPSS software was used for tabulation of data.

Chapter 2

Targeted Survey and Findings (Household)

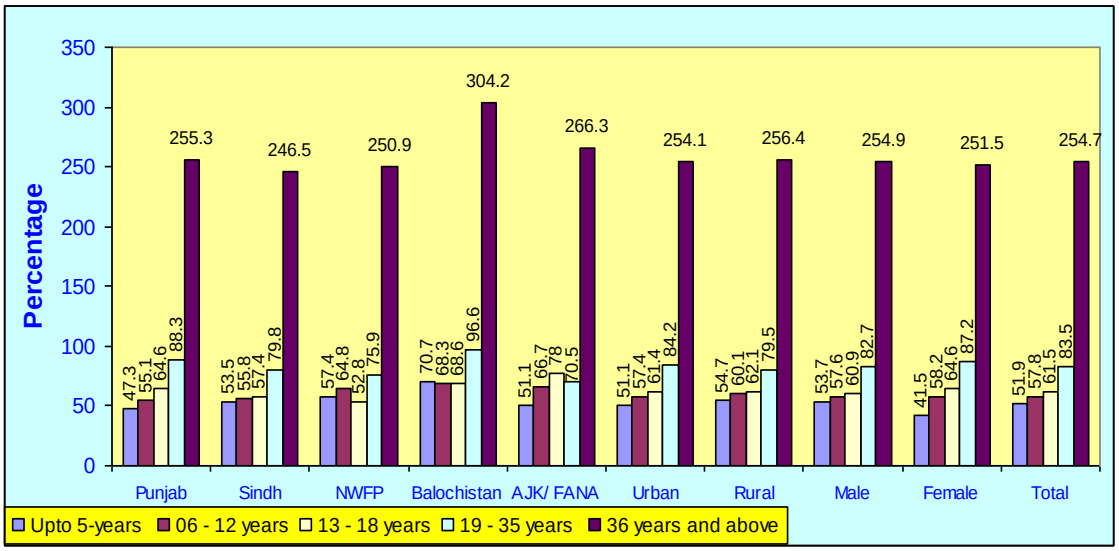
2.1 Respondents Profile

A total of 5055 respondents were interviewed across Pakistan and information on various aspects of TV viewership and FM Radio listening was collected. Since the study was targeted to collect information regarding programmes screened through cable networking, the households with cable TV connections were deliberately chosen. Cable networking is more common in urban compared to rural areas. This resulted in an inflated sample from urban compared to rural areas. Out of 5055 households, 4286 households (85 percent) were interviewed from urban and 769 (15 percent) from rural domain. The sample consisted of 47 percent households from Punjab, 29 percent from Sindh, 15 percent from NWFP and 4 percent each from Balochistan and AJK/FANA. Since the interviewers who collected information were male, majority of respondents were also from the same gender (85 percent). Women respondents constituted 15 percent of the total sample. Nearly 86 percent of the respondents were between the ages 20-49 years; while the remaining were either younger (6 percent) or 50 years or above (8 percent). Three-fifths of the respondents were currently married and majority of the respondents (74 percent) had Matric or above education. The proportion of respondents with no education constituted nearly 8 percent. Majority of the respondents belonged to the business community (29 percent) followed by office workers (27 percent), junior or mid level professionals (15 percent), and unskilled workers including farmers/cultivators (11 percent). More than half (56 percent) of the households had only one earning member while more than one-quarter of the households (28 percent) had less than Rs 10,000 monthly income. More than one-third had monthly income in the range of Rs10,001-20,000 while one-quarter had monthly family income of Rs 20,001-50,000 while the rest 10 percent had a family income of more than Rs. 50,000.

2.2 Viewership of TV in the Households

The proportion of household members watching TV programmes increases with age. The viewership increases from 52 percent for children up to age 5 years to over 80 percent for age 19 and above. The viewership among females is reported more than males except children under 5 years of age. In Balochistan, the viewership is almost universal (97 percent) between ages 19-35 years, but is comparatively low among members of lower and higher ages (ranging between 68-71 percent). In Punjab almost nine out of ten persons age 19 and above watch TV programmes whereas in Sindh province the proportion drops down to 80 percent for the same age group. Generally children under age 19 are relatively less likely to watch TV programmes compared to those aged 19 and above.

Figure-2.1
Viewership of Households by age and region, Pakistan, 2009



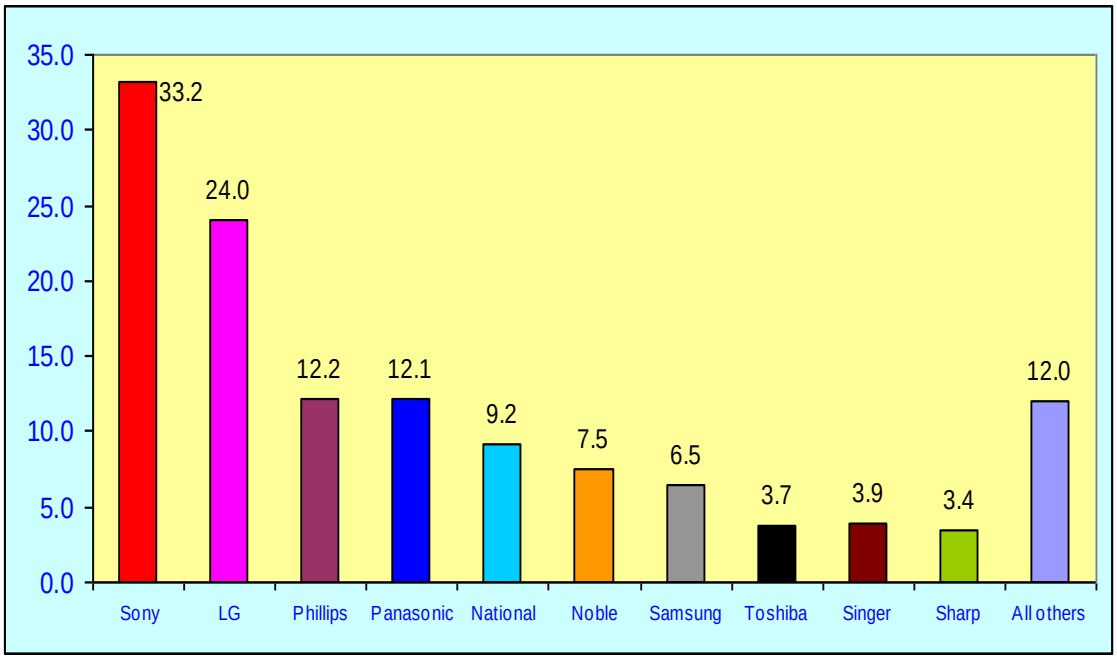
Source: Annex Table-2.7 and 2.8

2.3 Ownership of TV and Viewership

2.3.1 TV ownership and brands

Television was owned by 98 percent of the households; however, the remaining two percent were also TV viewers. Respondents with low income and respondents with no education had reported less TV ownership than other income and educational groups. Majority of the households (81 percent) had only one TV set. It is more in rural area (90 percent) than in urban area (79 percent). Persons with higher family income and higher education had more than one TV sets in their houses. While 19 percent had 2 or more TVs. Urban respondents had more than one TV sets (21 percent) than rural respondents (10 percent). Nearly two-thirds of the households had imported TV sets. Rural respondents had slightly more imported TV sets than urban respondents (61 percent). Imported TV sets were more common in AJK / FANA (96 percent) followed by Balochistan and NWFP (83 percent each). The least imported TV sets (45 percent) were reported in Sindh. Male respondents reported more imported TV sets (65 percent) than females who had 44 percent imported TV sets. Urban households had larger TV sets than rural households. Half of the households had TV sets measuring 21 inches. Smaller TV sets (14 inches) were also common (44 percent) particularly in rural areas (53 percent). A vide variety of brands were reported but the Sony brand seems to be more common (33 percent) at the aggregate level and in all regions except NWFP where Panasonic seems to be most preferred (35 percent). Other favourite brands reported by the households are LG (24 percent) and Phillips (12 percent). Female respondents had more Sony sets (43 percent) than male respondents (31 percent).

Figure-2.2
TV Brands in Use, Pakistan, 2009



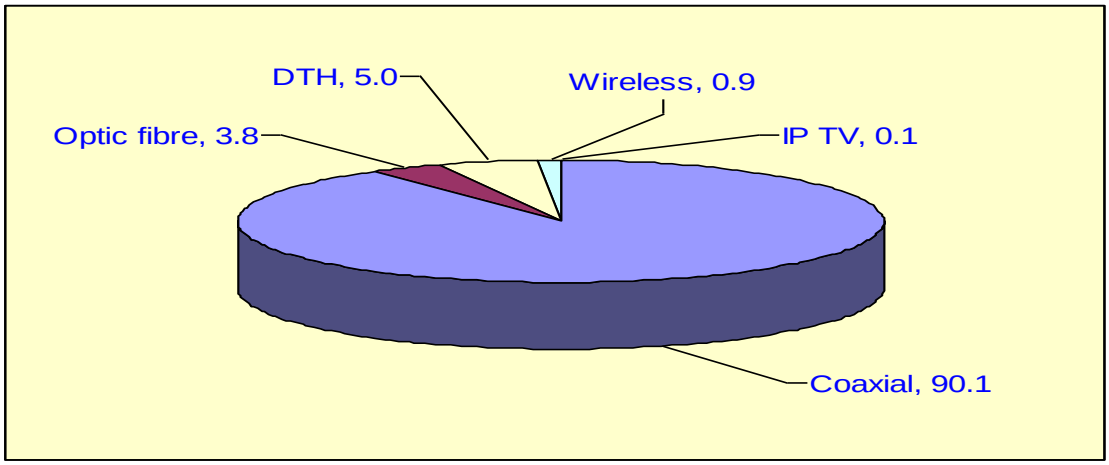
Source: Annex Table-2.21 and 2.22

2.4 Cable TV Networking

Cable TV network was available in 83 percent households having TV sets (85 percent males and 71 percent females). It was more common in urban (85 percent) but was also high (71 percent) in the rural areas of the sample areas. It was reported less common among respondents with no education. As regards, family income no trend of CTV ownership has been noted The households selected from the five districts of Balochistan namely Quetta, Khuzdar, Loralai, Sibbi and Lasbella all were connected with cable networking. The CTV however, was not much common in NWFP (54 percent).

Coaxial type of cable networking was reported to be more common (90 percent) across regions and urban area except NWFP and rural area where it is 65 percent and 78 percent respectively. It is followed by DTH (5 percent) and Optic fibre (4 percent). However DTH and optic fibre type of CTV was reported the highest (17 percent each) in Balochistan. Wireless networking was reported by only one percent households.

Figure-2.3
Type of Cable Television Network, Pakistan, 2009

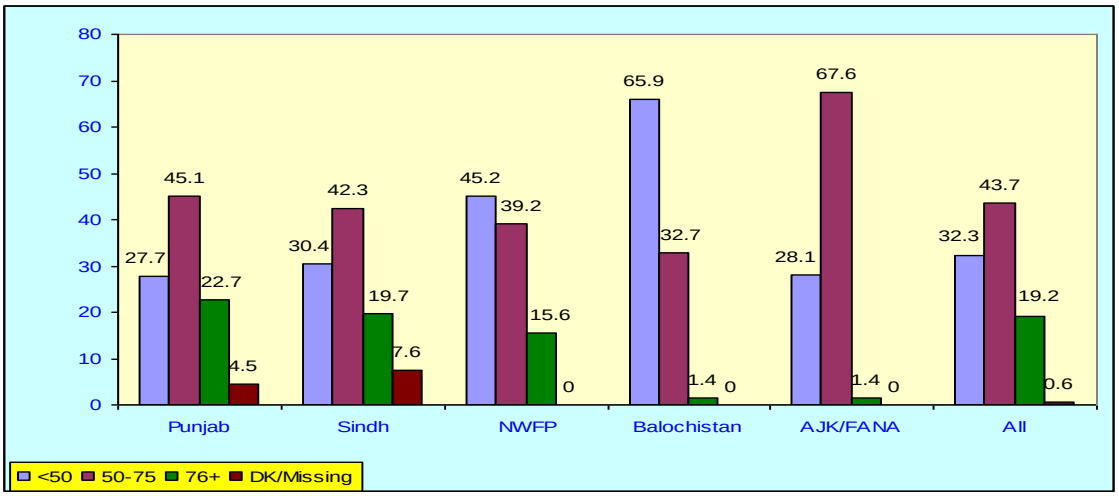


Source: Annex Table-2.23 and 2.24

2.5 Availability of TV Channels

Majority of the households having TV sets (44 percent). Males (42 percent) and females (53 percent) reported that they had access to TV channels ranging between 50-75, whereas nearly one-third households (32 percent) had access to less than 50 channels (55 percent in rural and 29 percent in urban households, 36 percent males and 15 percent females). Households having access to more than 75 channels were reported 6 percent in rural and 21 percent in urban areas. Its gender breakdown among males and females, it is reported 18 percent and 27 percent respectively. Almost similar pattern was observed across the regional divide except AJK and FANA where 68 percent households had access to 50-75 channels.

Figure-2.4
Availability of CTV Channels, Pakistan, 2009

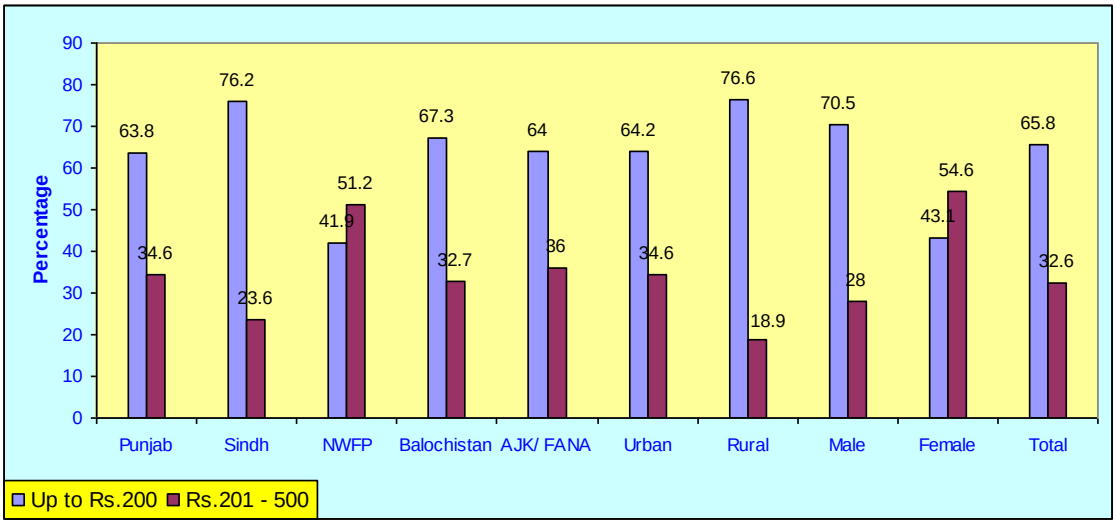


Source: Annex Table-2.25 and 2.26

2.6 Cable Network Fee

The average monthly TV connection fee is reported Rs.220 in the country (Rs.222 in urban and Rs.208 in rural area). The highest fee is paid in NWFP (Rs.270) and the least in Sindh (Rs.198). The monthly fee of the cable TV network is reported as Rs 200 or less by two-thirds of the households at aggregate level (71 percent males and 43 percent females). More households have reported this rate in rural areas (77 percent) and in Sindh (76 percent) whereas majority of the households in NWFP (51 percent) reported to be paying Rs 201-500 for this facility. Females in this range pay more (55 percent) than males (28 percent).

Figure-2.5
Percentage of respondents by amount of fee paid for CTV connections, Pakistan, 2009



Source: Annex Table-2.27 and 2.28

2.7 Regular TV Watchers

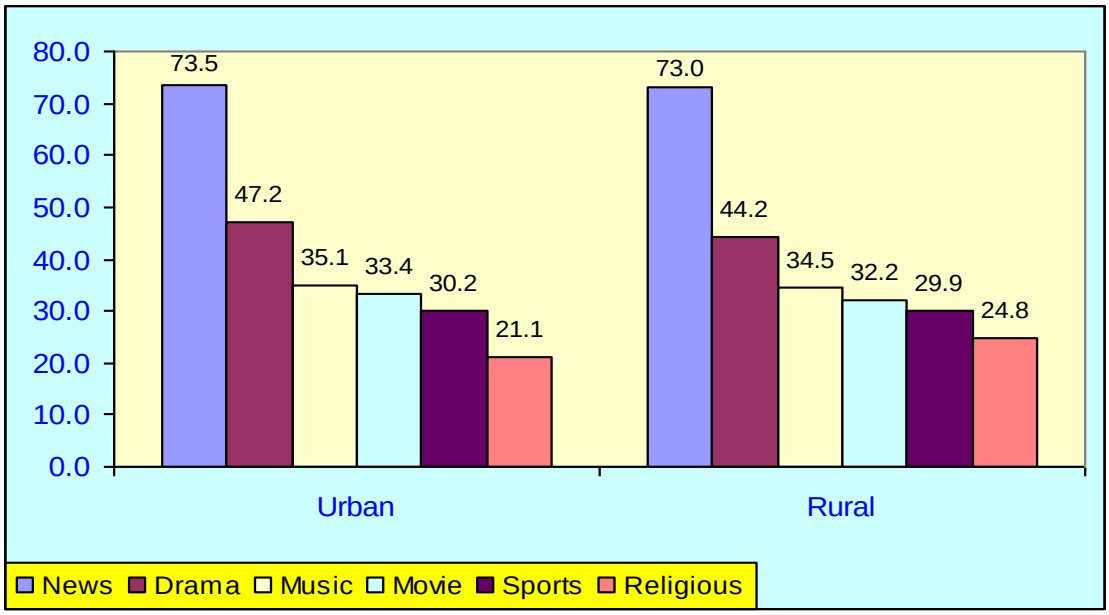
About three-quarters (76 percent) of the respondents watch TV regularly (77 percent) urban versus 73 percent rural). The least regular watchers of TV are reported in NWFP (45 percent) followed by AJK / FANA (58 percent) while the highest regular watchers are reported in Sindh (90 percent). Older people watch less than other persons.

2.8 Usually watched and favourite channels

In reply to the question of what channels the respondents usually watch, the news channels are reported by highest proportion at the national level (74 percent), urban-rural (73 percent), and across all regions (Balochistan 89 percent; Sindh 79 percent; Punjab 72 percent; NWFP 71 percent and AJK/FANA 46 percent) males watch more (74 percent) news than females (68 percent). The other usually watched channels/programmes are Dramas followed by Music, Movies, and Sports. In response to the question of 'what are your most favourite channels/programmes?' the order remains the same at the aggregate level. However, some variations in order are noted for various regions and urban-rural divide. In Balochistan, AJK/FANA and rural and urban areas, religion, geographic, current affair and animals programmes were also

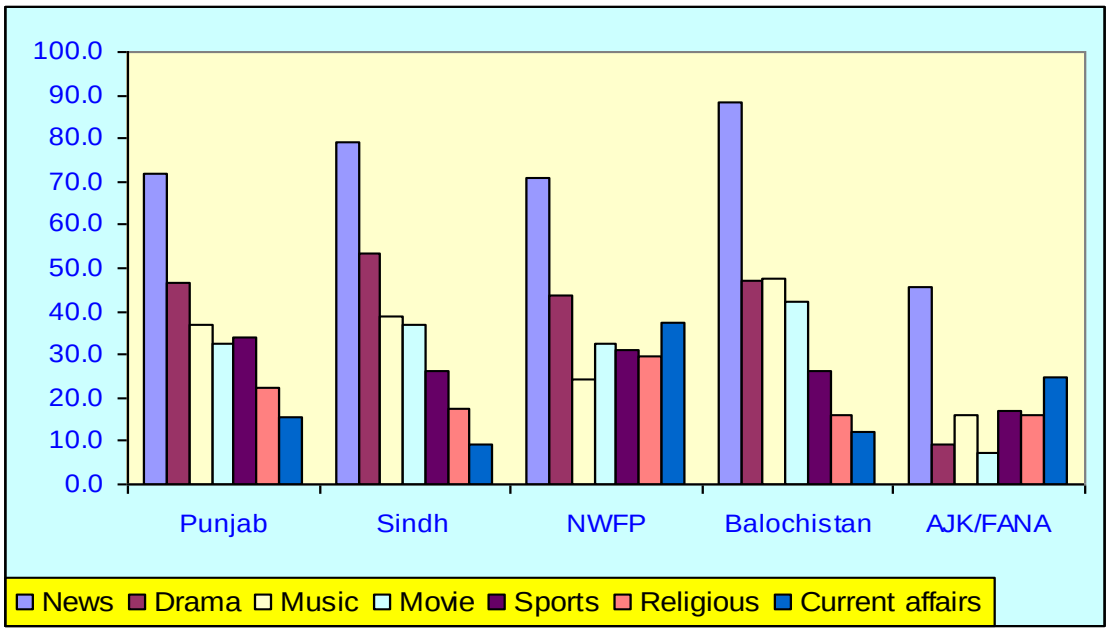
added to the list of favourites while comparing five most favourite channels. Dramas and cooking are more prominent among females than males while sports is more viewed by males. The most favourite channels by female are reported to be dramas (53 percent), music (32 percent) and cooking (13 percent) while males favourite channels are news (49 percent) movies (25 percent), sports (24 percent), religion (21 percent), geographic (18 percent) and current affairs as well as mixed programmes (14 percent each)

Figure-2.6
Channels usually watched by residents, Pakistan, 2009



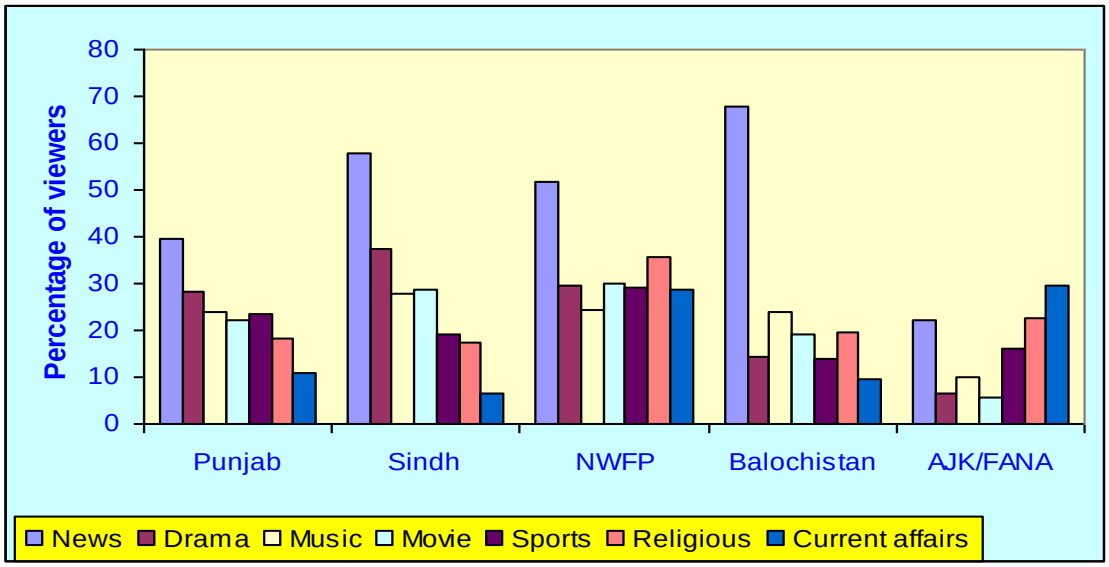
Source: Annex Table-2.31 and 2.32

Figure-2.7
Channels usually watched by region, Pakistan, 2009



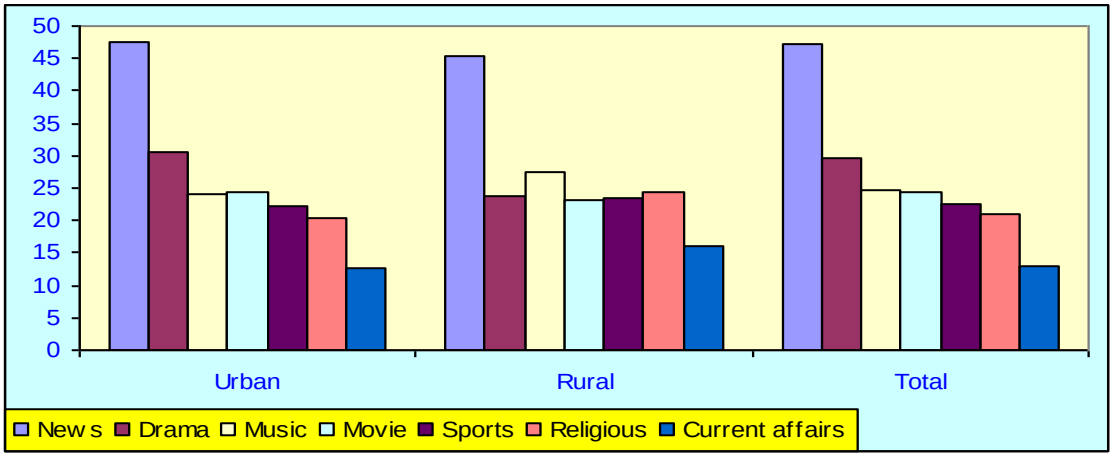
Source: Annex Table-2.31 and 2.32

Figure-2.8
Favourite TV Channels by Region, Pakistan, 2009



Source: Annex Table-2.33 and 2.34

Figure-2.9
Favourite Channels by Residence, Pakistan, 2009



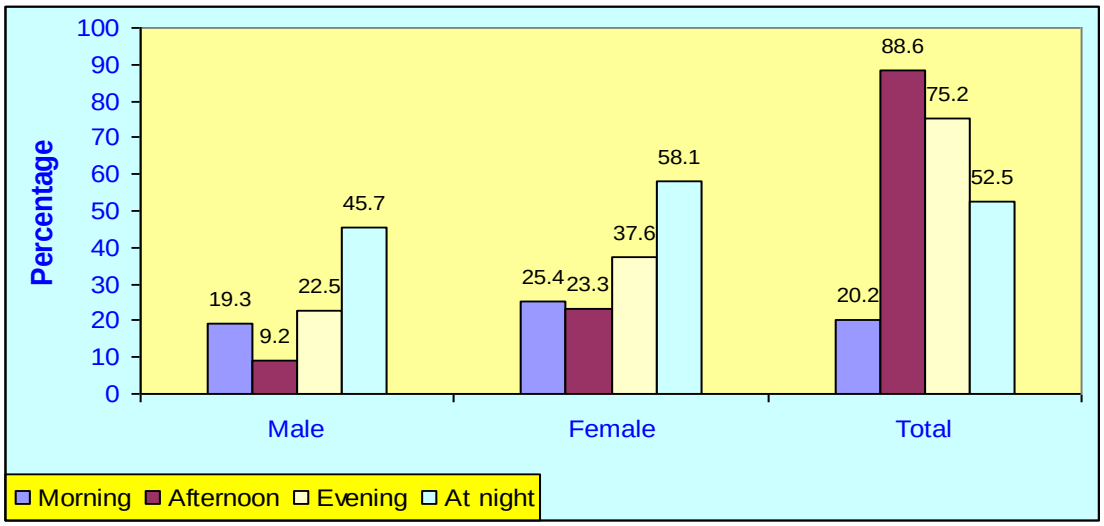
Source: Annex Table-2.33 and 2.34

2.9 Time and duration of watching TV programmes

Time and duration of watching television programmes varies by region and residence. The study suggests that the viewership of the TV programmes increases as the day progresses. In the morning, 20 percent respondents (20 percent males and 25 percent females) watch TV programmes. The proportion plunges to 11 percent in the afternoon (9 percent males and 23 percent females) when mostly male members of the family are out on their businesses and students are at their educational institutions. However, the viewership increases to 25 percent in the evening and to around 48 percent at night when mostly people return from their work. The male viewership increases progressively to 23 percent in the evening to 46 percent at night. The female viewership increases 37 percent in the evening to 58 percent at night. Those who watch TV programmes in the morning, majority of them watch it for 1-2

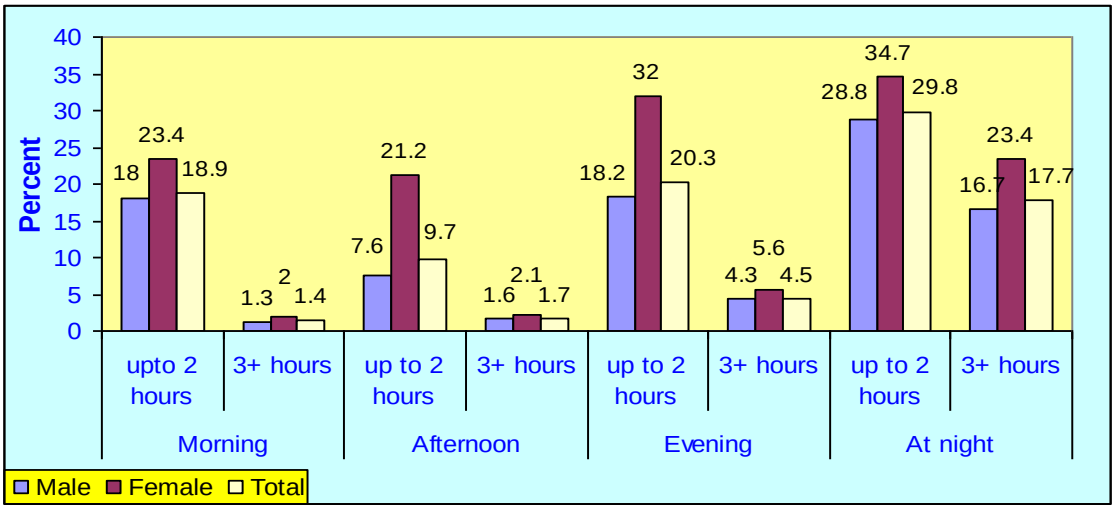
hours. Majority of the afternoon watchers also watch for the same duration. However those who watch TV programme in the afternoon and at night, they glue to the TV sets for extended period of time. Twenty-nine percent of the respondents who reported to be watching TV at night spend up to 2 hours while additional 17 percent stick to the TV sets up to four hours at night. The proportion of such viewers is almost similar in urban and rural areas. Females duration of viewing TV is reported more than males at all the times. Almost close to 60 percent respondent watch TV programmes up to 4 hours in the evening and at night in Sindh and Balochistan provinces whereas the proportion of such TV viewers is 46 percent in Punjab and urban areas of Pakistan. The proportion of respondents watching TV programmes at night is lowest in AJK/FANA (19 percent) followed by NWFP (24 percent).

Figure-2.10
Timings of watching TV Programmes, Pakistan, 2009



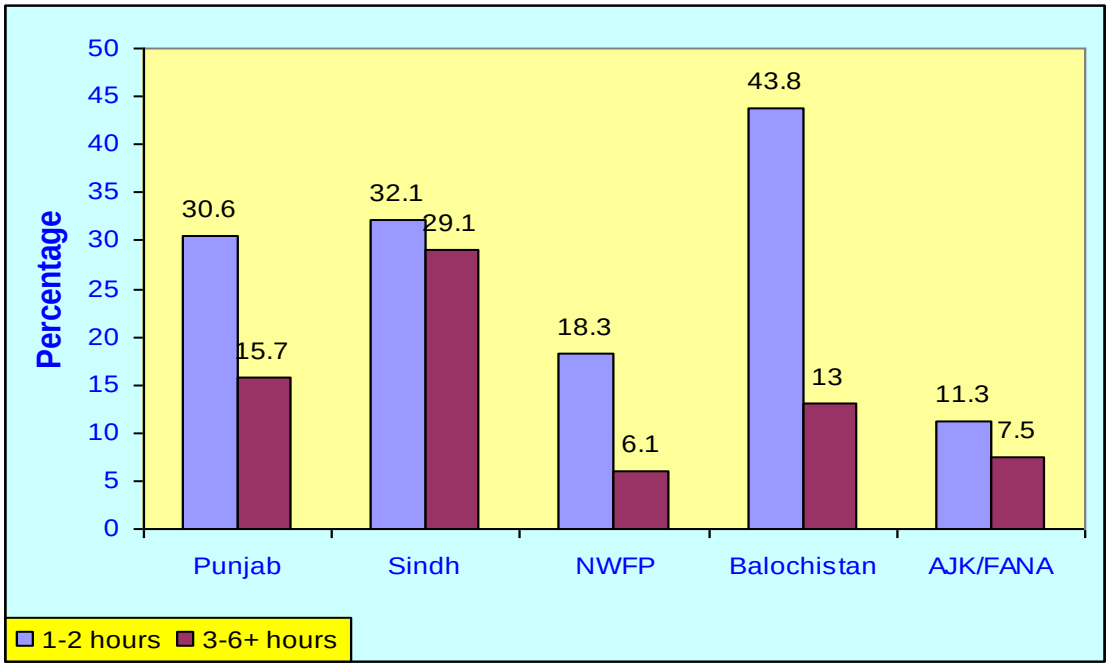
Source: Annex Table-2.29 and 2.30

Figure-2.11
Timing and duration of watching TV Programmes, Pakistan, 2009



Source: Annex Table-2.29 and 2.30

Figure-2.12
Duration of watching TV Programmes at Night, Pakistan, 2009

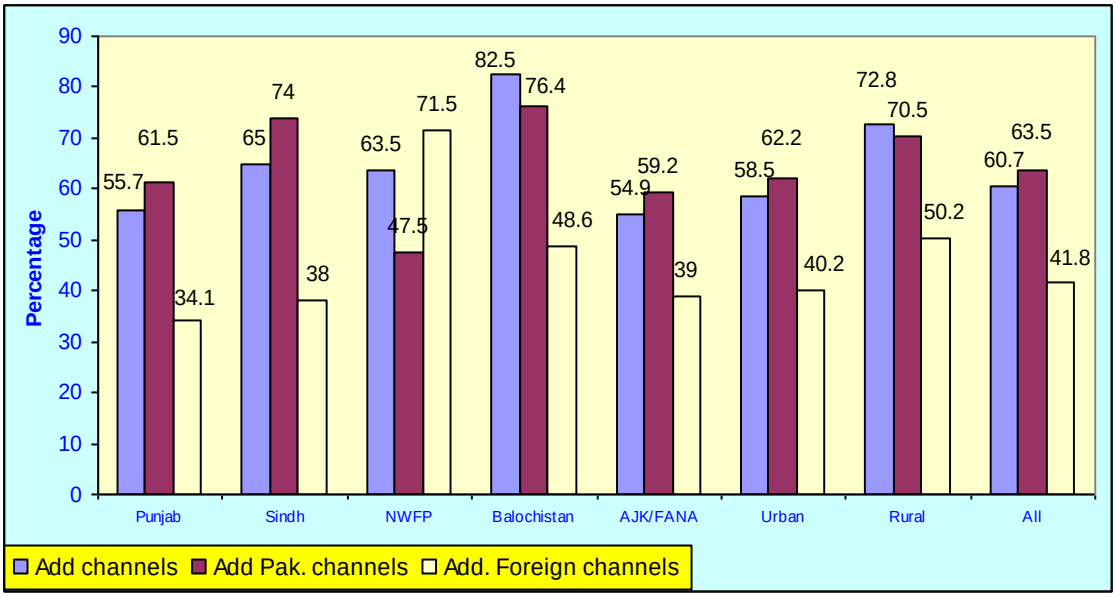


Source: Annex Table-2.29 and 2.30

2.10 Demand for additional channels

In response to questions on additional TV channels, 61 percent respondents (64 percent males and 41 percent females) desired for additional channels to be made available. The highest demand was from Balochistan where 83 percent respondents desired to have additional channels. Sixty-four percent respondents wanted to see more Pakistani channels, (66 percent males and 51 percent females). The desire for additional Pakistani channels was reported more in rural (71 percent) than urban area (62 percent). While 42 percent respondents expressed their desire for additional channels in foreign language. The highest demand for foreign language channels came from NWFP where 72 percent respondents desired to have additional channels in foreign language. This desire is reported more in rural (50 percent) than urban areas (40 percent) and among males (45 percent) than females (26 percent). The desire for having more channels in foreign language increases with education. Twenty-six percent of the respondents with no education desired to have additional channels in foreign language against 51 percent respondents who had master or above degree. A higher proportion of male respondents presumably with higher education had desired for additional channels of foreign language compared to women.

Figure-2.13
Percentage of Respondents desiring additional Pakistani and Foreign Channels by Province, Pakistan, 2009



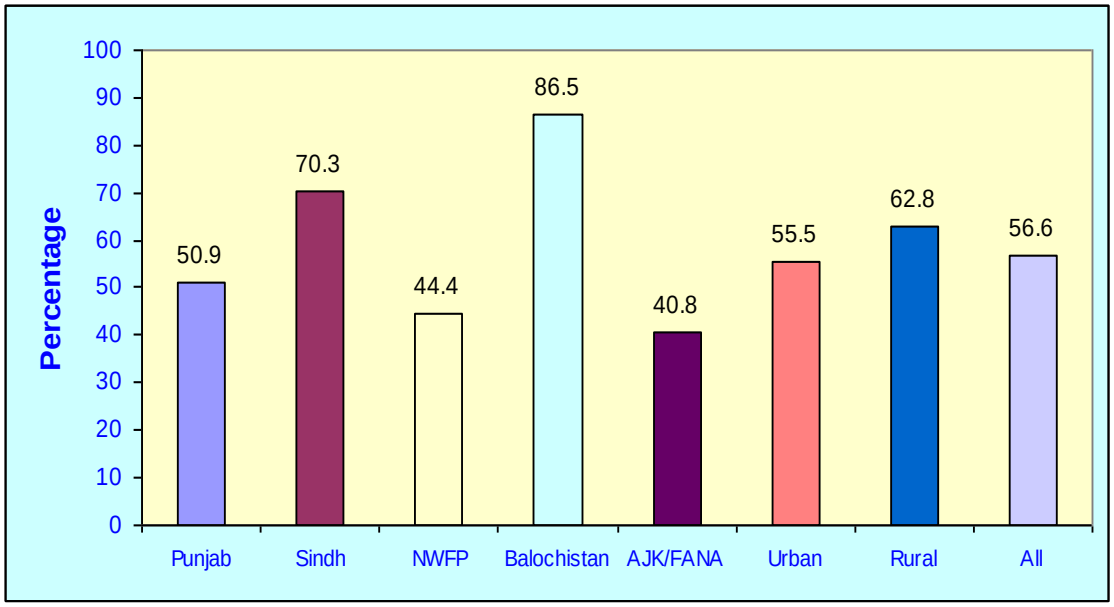
Source: Annex Table-2.35 and 2.36

2.11 Viewership of regional channels/programmes

Overall 57 percent respondents reported to have been watching TV channels in regional language. It was higher in rural (64 percent) than urban area (56 percent). Females watch more Punjabi language programmes (63 percent) than males (39 percent) while males like more Sindhi and Saraiki programmes than females. This proportion was highest in Balochistan (87 percent) followed by Sindh (70 percent). Those who were watching TV channels in regional languages, 63 percent respondents from Punjab reported to have been watching Punjabi channels while 43 percent were watching Sariaki channels. In Sindh, 88 percent respondents were watching Sindhi channels while 92 percent respondents from NWFP were watching Pushto channels and 62 percent were watching Balochi and 36 percent Pushto programmes in the province of Balochistan. In AJK and FANA those who were watching regional programmes 84 percent were watching Punjabi and 45 percent Potohari.

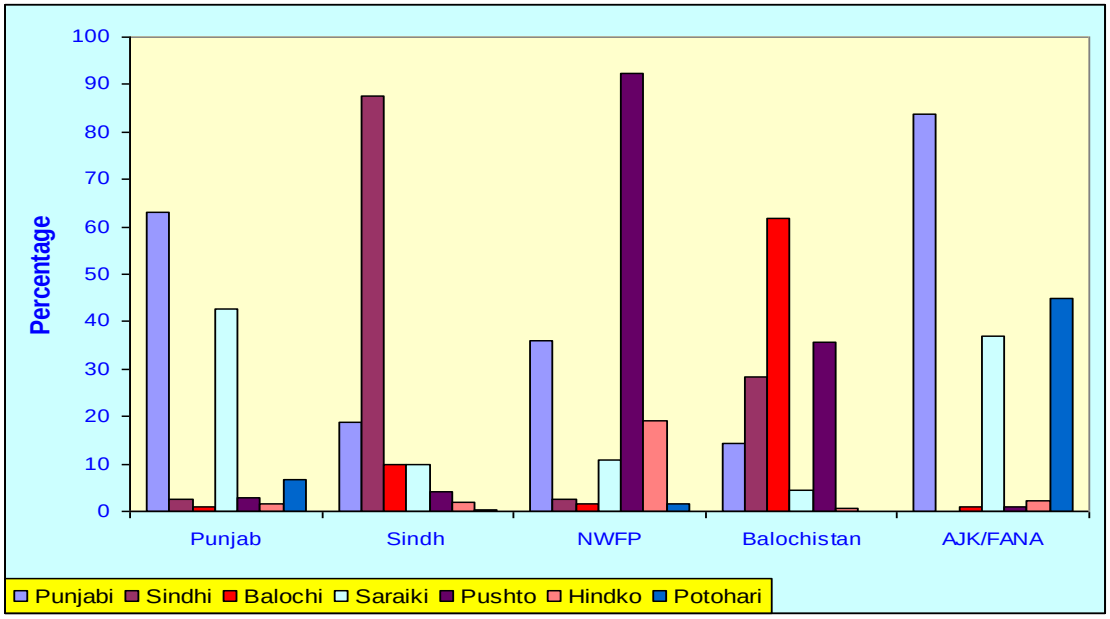
Those who wanted more channels in regional language majority of the respondents favoured the language spoken most in their respective provinces i.e. Punjabi (39 percent) and Sariaki (24 percent) in Punjab; Sindhi (63 percent) in Sindh; Pushto (30 percent) and Hindko (24 percent) in NWFP; Balochi (57 percent) and Pushto (30 percent) in Balochistan and Punjabi (30 percent) and Potohari (22 percent) in AJK/FANA. The preference for local language was relatively higher in rural compared to urban areas and in all provinces.

Figure-2.14
Percentage of respondents who watch TV in regional languages by region and residence, Pakistan, 2009



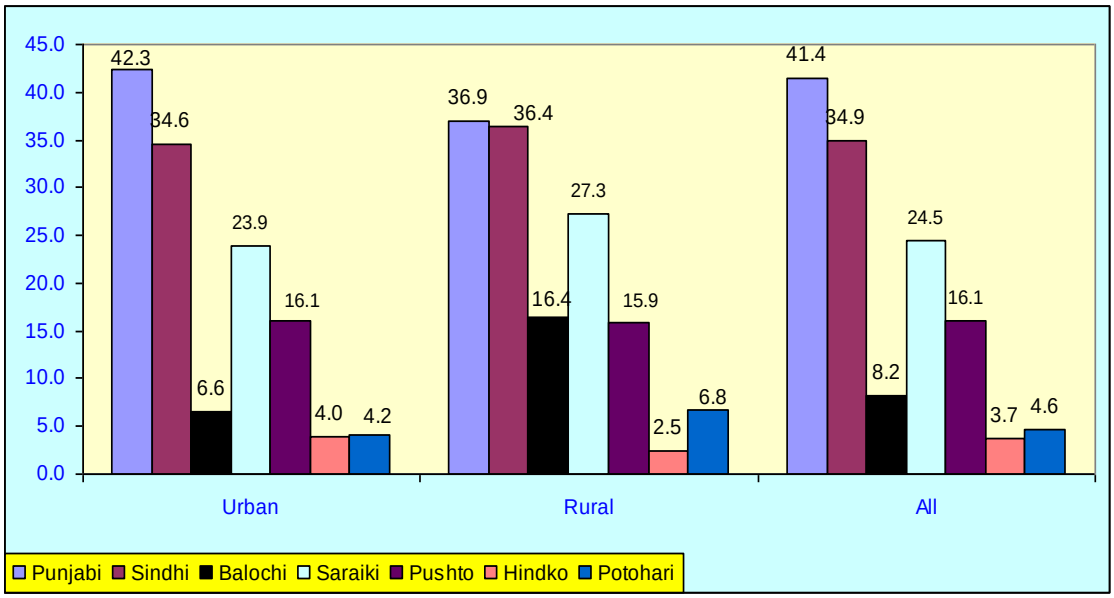
Source: Annex Table-2.35

Figure-2.15
Percentage of TV watchers watching local TV Channels by language of channel and region, Pakistan, 2009



Source: Annex Table-2.41

Figure-2.16
Percentage of respondents who watch TV in regional languages by residence, Pakistan, 2009

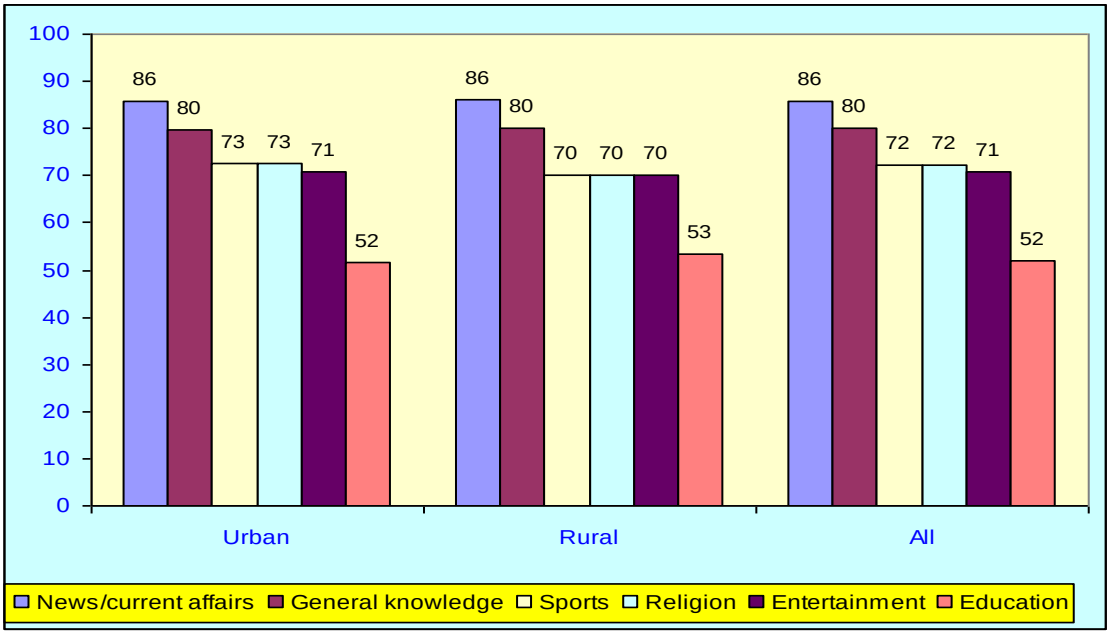


Source: Annex Table-2.41

2.12 Usefulness of CTV Programmes

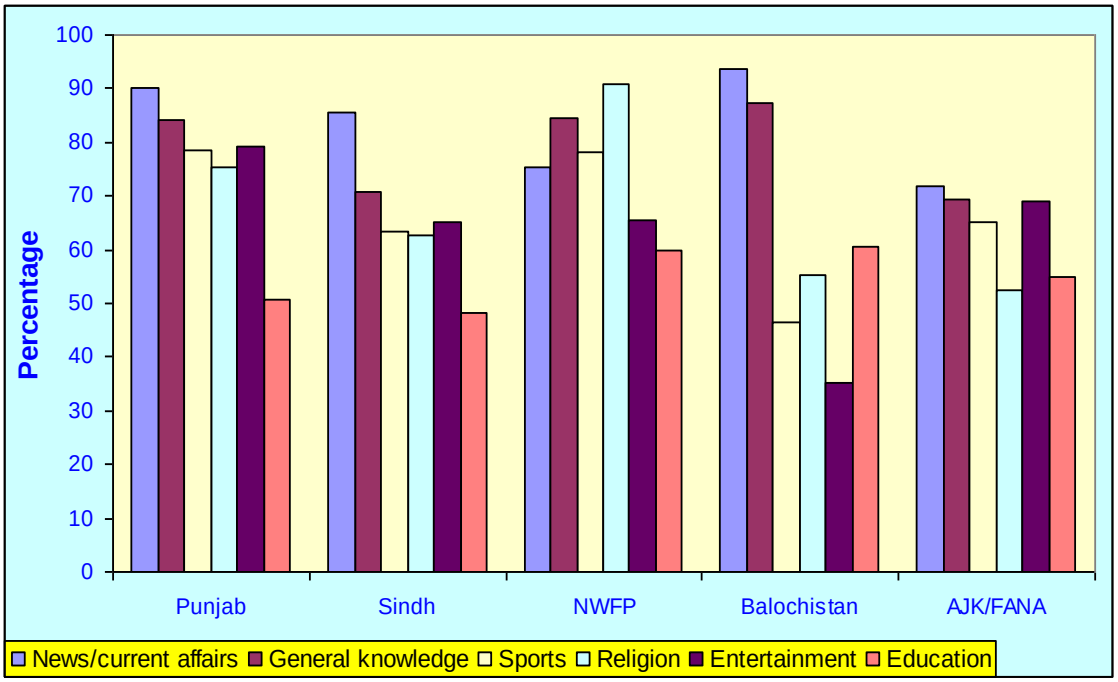
In response to the question whether Pakistani channels are useful in various areas such as general knowledge, news/current affairs, sports, food/cooking, entertainment, education, travel, business and religion, an overwhelming appreciation (86 percent) was accorded to the news/current affairs segments which was considered useful by the respondents for self as well as for the entire family. Equal appreciation was reported from urban-rural and regional divide. The second most preferred programme/channel reported by the respondents was general knowledge (80 percent) followed by religion and sports (72 percent each). However, among NWFP viewers (91 percent), religion channels / programmes were considered more useful than any other TV channels or programmes. Among females the usefulness of the Pakistani TV channels ranked news (91 percent) general knowledge (86 percent) entertainment (83 percent), sports (79 percent), food/cooking (78 percent), religion (71 percent). Among males it ranked as news/current affairs (85 percent) general knowledge (79 percent) religion (71 percent), sports (79 percent) and entertainment (69 percent). The usefulness for sports, food/cooking and travel declined with increase in age. The ranking of programmes according to their usefulness based on educational level of respondents is almost similar. There are no variations noted by rural urban divide, except for food/cooking and travel.

Figure-2.17
Usefulness of Pakistani Channels by Residence, Pakistan, 2009



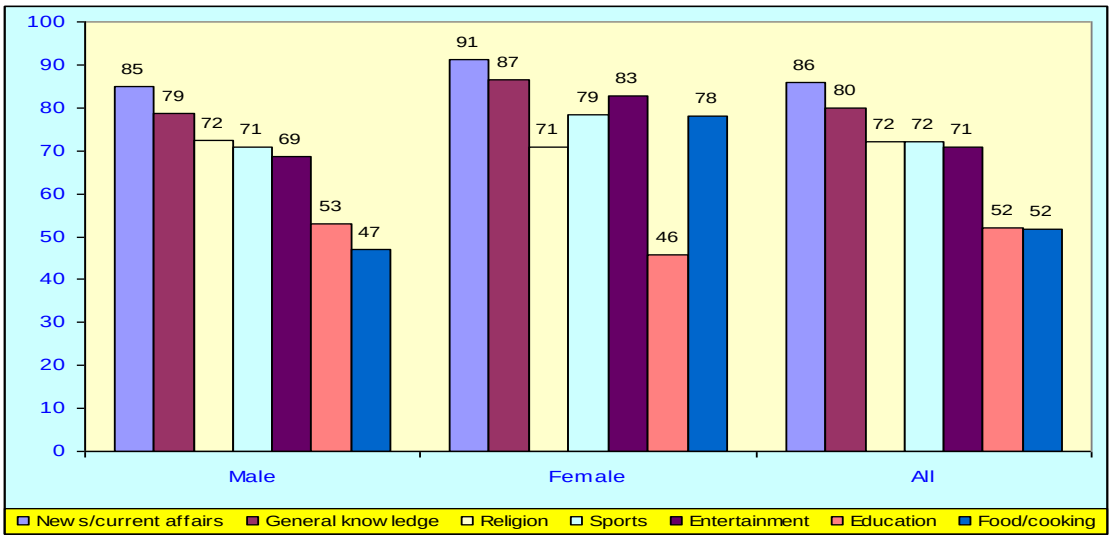
Source: Annex Table-2.45

Figure-2.18
Percentage of respondents expressing usefulness of Pakistani CTV channels by region, Pakistan, 2009



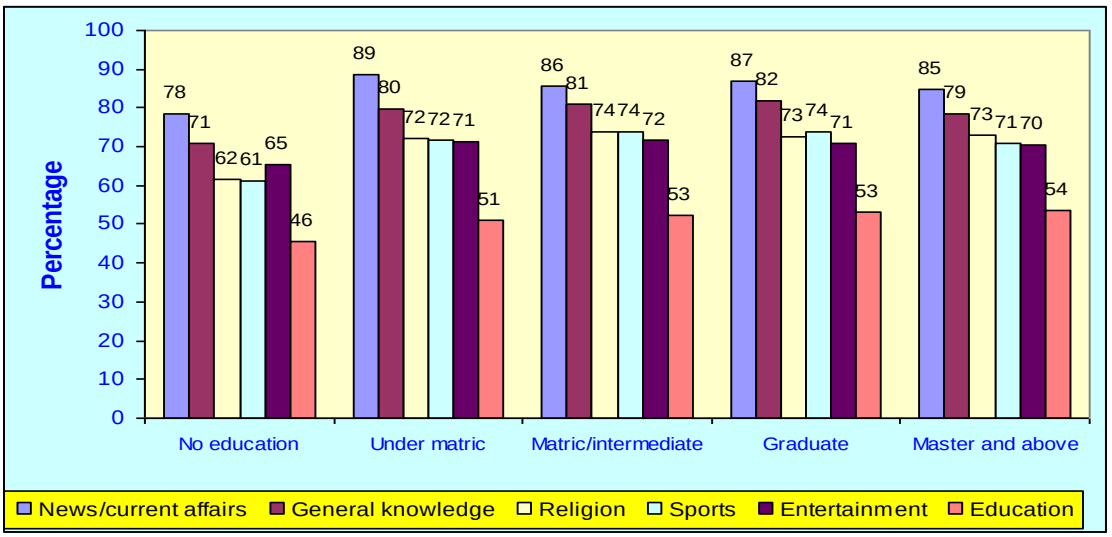
Source: Annex Table-2.45

Figure-2.19
Usefulness of Pakistani channels by gender, Pakistan, 2009



Source: Annex Table-2.45

Figure-2.20
Usefulness of Pakistani channels by level of education of respondents, Pakistan, 2009



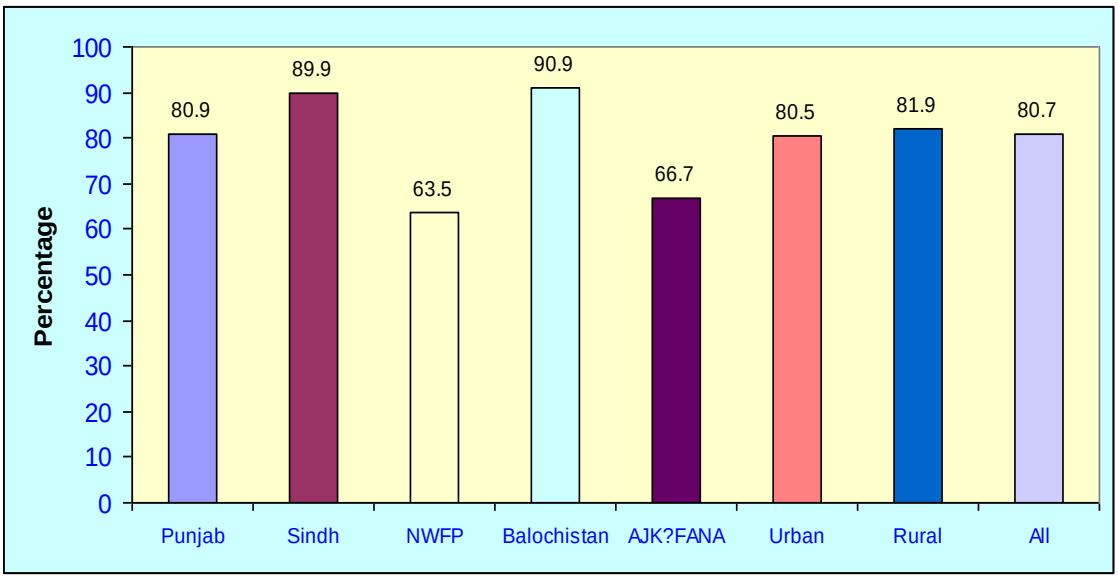
Source: Annex Table-2.46

2.13 Demand for local channels

Majority of respondents (81 percent) favoured to have local/community TV channels to focus on local problems and issues. The idea was almost equally appreciated among urban (81 percent) and rural (82 percent) and male and female respondents (81 percent). Nine out of ten respondents in Balochistan, Punjab and Sindh and two-thirds in AJK/FANA and NWFP expressed that setting up TV channels at local level will help solve local problems and issues. Those who supported the idea of local TV channels proposed the language to be Urdu (53 percent) and the respective regional language (46 percent) while one-fourth of the respondents also proposed a mixed language. English language was proposed by a minority (7 percent) at the aggregate level however, one in five among NWFP and one in eight among

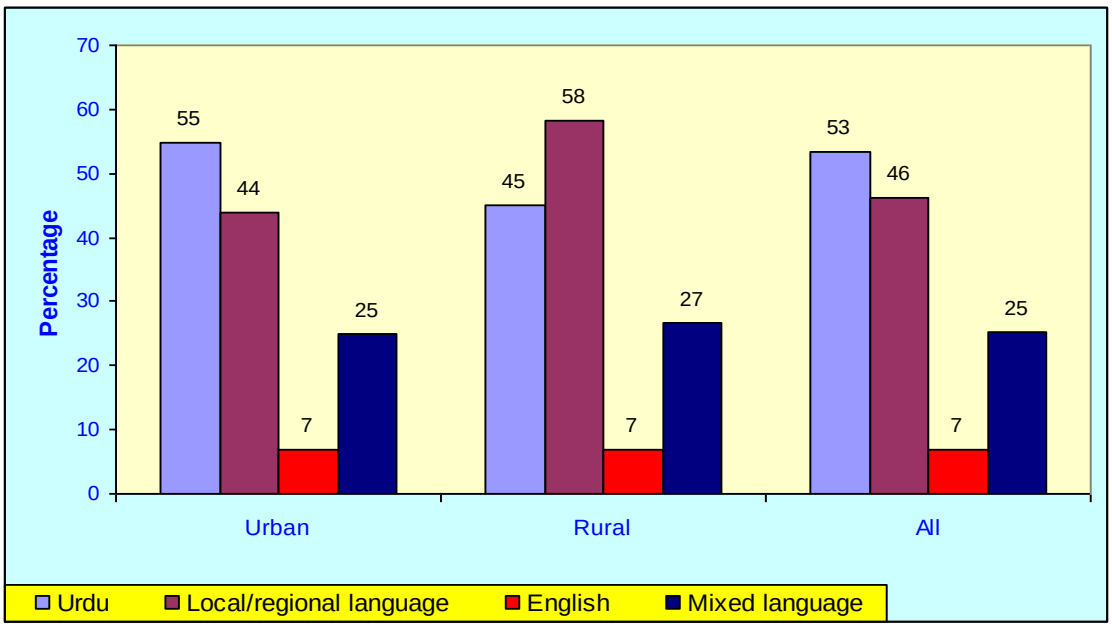
AJK/FANA viewers also supported the English language. Majority of the respondents with some education preferred Urdu over local or regional language. Two-thirds of the respondents favouring local TV channels also supported that such TV channels should be accessible through CTV network and more than half also liked the terrestrial antenna as well.

Figure-2.21
Percentage of respondents recommending local community channels to focus on local problems and issues by province, Pakistan, 2009



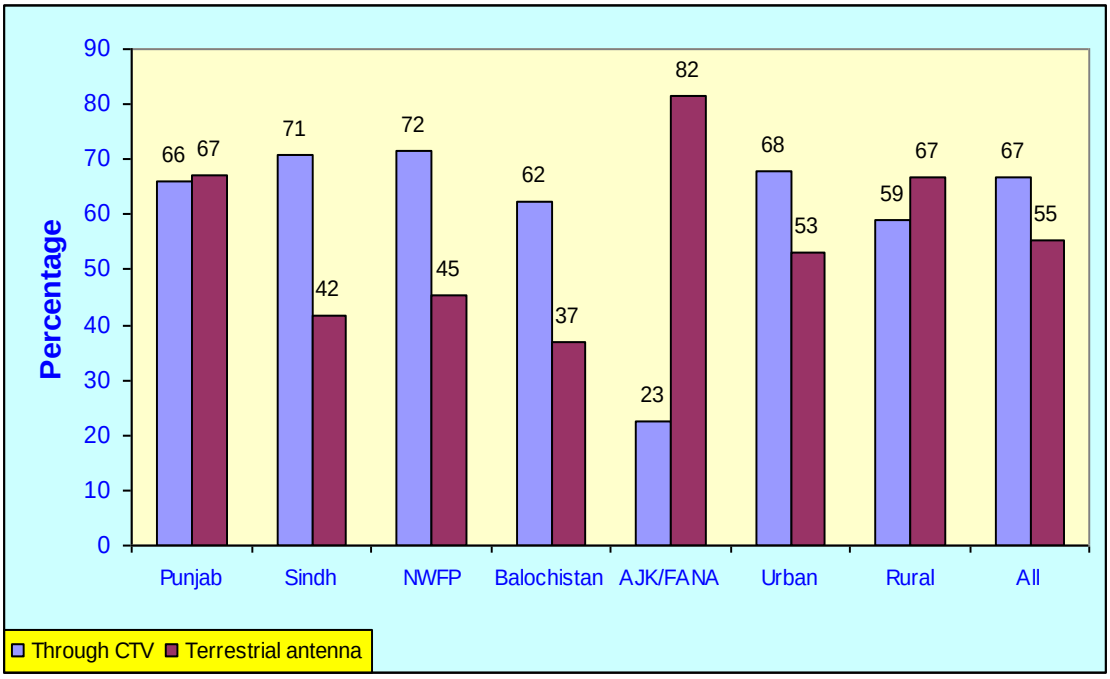
Source: Annex Table-2.47 and 2.48

Figure-2.22
Percentage of respondents who recommend local channels by language of channel and region, Pakistan, 2009



Source: Annex Table-2.47 and 2.48

Figure-2.23
Percentage of respondents who recommend local TV channels through CTV and Terrestrial Antenna, Pakistan, 2009



Source: Annex Table-2.47 and 2.48

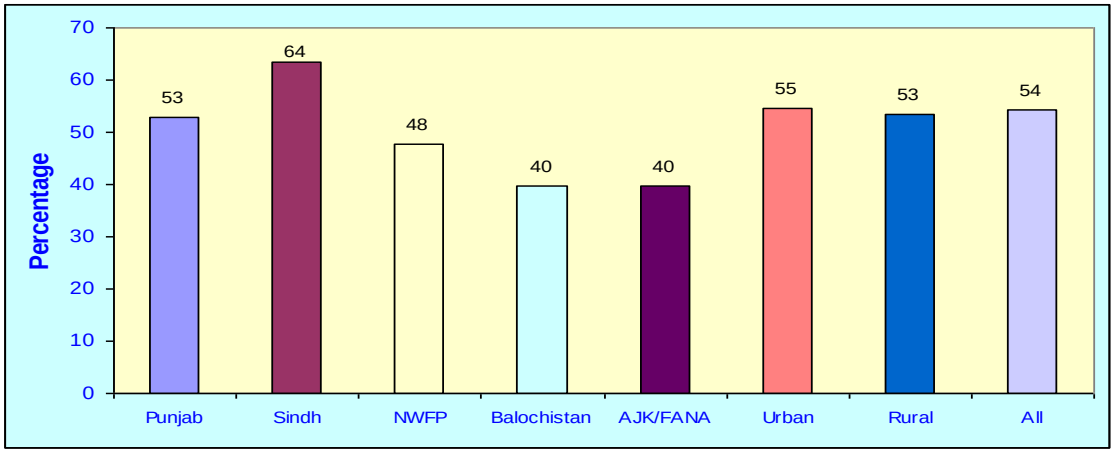
Box-2.1

In Pakistan major part of Cable TV system is based on Coaxial Cable. Gradually modern technologies are being introduced. Optic Fiber system, MMDS, IPTV and WiMax services have been introduced.

In the household survey data was collected about type of connection for Cable TV subscribers. Data in this respect shows following type of connections with related devices:

1.Coaxial Cable connection (direct analogue connection)	90.0 percent
2. Optic Fiber connection (digital terminal)	3.8 percent
3. Wireless connection like MMDS and WiMax (digital receiver)	1.0 percent
4. Dish antenna decoder (analogue decoder)	5.0 percent
5. Others like IPTV etc. (ADSL)	0.2 percent

Figure-2.24
Percentage of respondents who are watching advertisements on TV and are satisfied with the quality/standard of advertisement, Pakistan, 2009

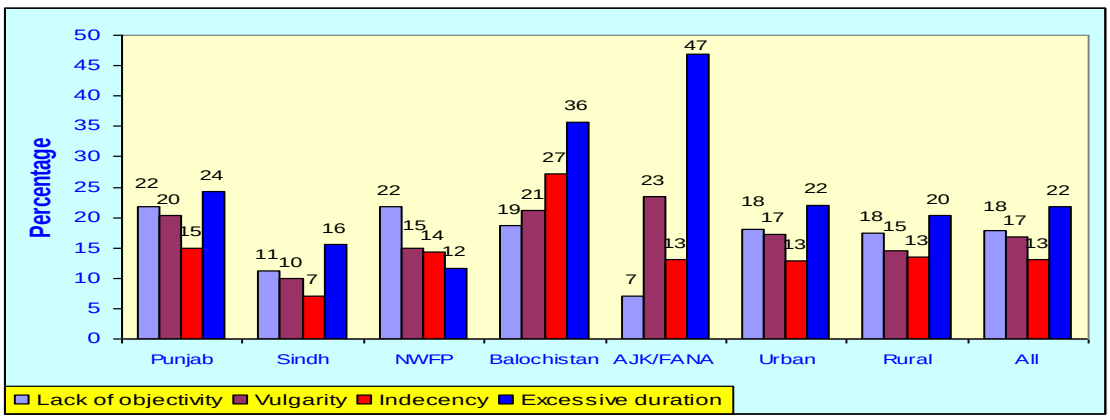


Source: Annex Table-2.49 and 2.50

2.14 Quality of Advertisements

Advertisements are also watched by a majority of viewers (70 percent) both in urban and rural areas. However, 80 percent females and 69 percent males watch advertisement. The proportion of these viewers is highest in Punjab (78 percent) and lowest in NWFP (51 percent). Among those who watch advertisements on TV about half of them (54 percent) were satisfied with the quality and standard of the advertisements. Males reported to be more satisfied (56 percent) than females (45 percent) However, these advertisements appeared vulgar or indecent to about 30 percent of the respondents. These are reported to be more vulgar or indecent to females than males. The advertisements appeared to be vulgar or indecent to more respondents in age group 60 and over (32 percent). Higher proportion of females (31 percent) compared to males (15 percent) considered advertisements as lacking objectivity. Excessive duration was reported by 22 percent of advertisement watchers. It was reported more among females (33 percent) compared to males (19 percent).

Figure-2.25
Percentage of respondents has complaints about the standard of advertisements, Pakistan, 2009

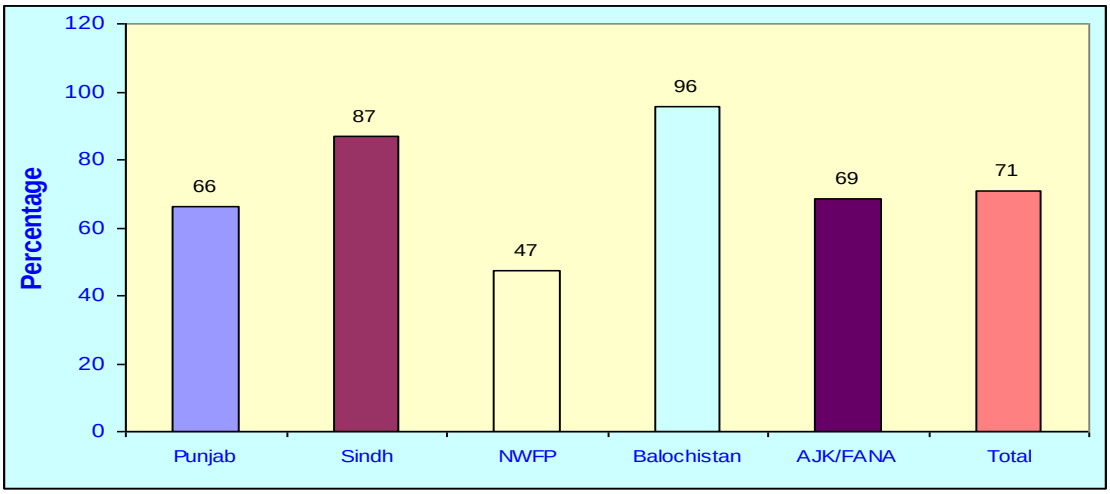


Source: Annex Table-2.49 and 2.50

2.15 FM Radio Broadcasting

The coverage of FM Radio broadcasting has been expanded in Pakistan. Out of 5055 households interviewed in the survey, 76 percent reported to have at least one FM radio while 6 percent households had more than one radio. Balochistan and AJK / FANA respondents reported having more radio sets than other provinces. Local and imported radio sets were equally in use. In rural areas more imported brands are used than urban area. Desk type and Tape-recorder Radios are more common (67 percent) compared to other types. Overall, nearly 71 percent households reported that they have been listening to FM broadcasts. In Balochistan, listening to FM radio is nearly universal (96 percent). In Sindh almost 9 out of ten (87 percent) people listen to FM radio programmes. In Punjab and AJK two-thirds respondents reported to be listening FM radio. In NWFP, however, the proportion of respondents listening to FM radio is relatively low as only 47 percent reported positively. Listening to FM radio is more common (85 percent) in urban as compared to rural areas (65 percent).

Figure-2.26
Percentage of respondents who listen FM Radio by region, Pakistan, 2009

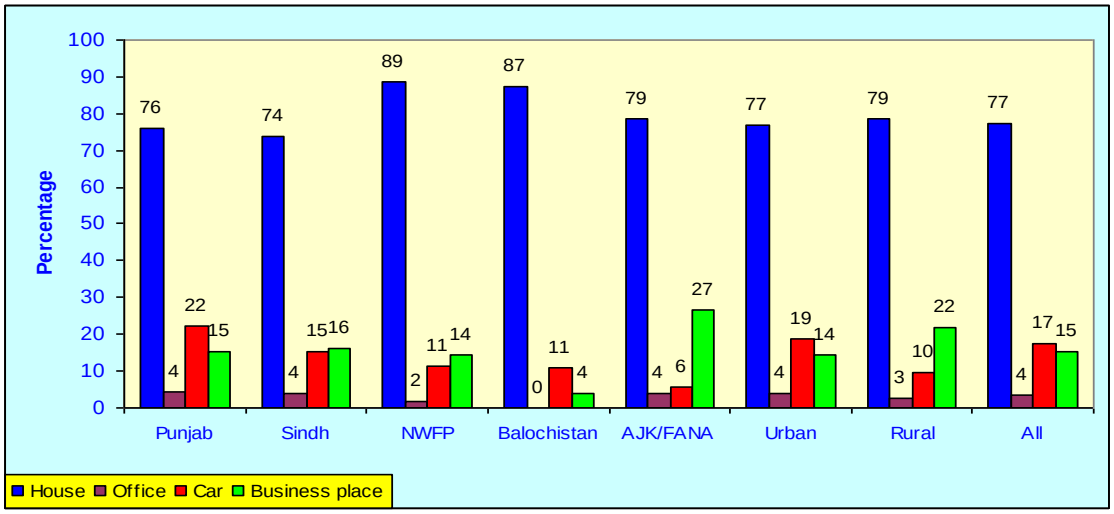


Source: Annex Table-2.51 and 2.52

Those who are listening FM radio programmes majority (77 percent) of them do so at home, while 17 percent listen while driving cars and 15 percent listen at their work place. In rural area respondents reported more listening it at work place (22 percent) than urban area (14 percent). As expected radio car listening in cars is reported more in urban area (19 percent) than in rural area (10 percent). Listening to FM radio at home is relatively more common in NWFP (89 percent) and Balochistan (87 percent) compared to AJK/FANA (79 percent), Punjab (76 percent), and Sindh (74 percent). Almost similar proportion of households reported to have been listening FM radio at home both in urban (79 percent) and rural areas (77 percent). While listening to FM radio is more common in the evening or lat night (55 percent) 44 percent respondent reported to have no specifically apportioned time for listening to FM

radio programmes. In NWFP, relatively higher proportion of respondents (52 percent) reported to be listening FM radio at late night.

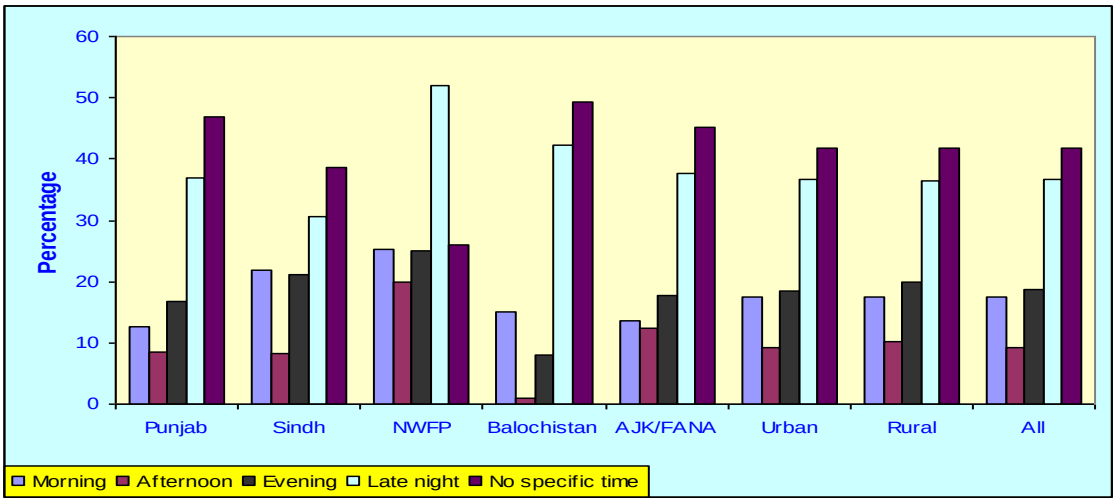
Figure-2.27
Percentage of respondents who listen to FM radio by place, Pakistan, 2009



Source: Annex Table-2.55 and 2.56

Majority of the listeners (42 percent) reported that there has been no specific time of listening to radio. However more than one third reported listening at late night (43 percent females and 35 percent females).

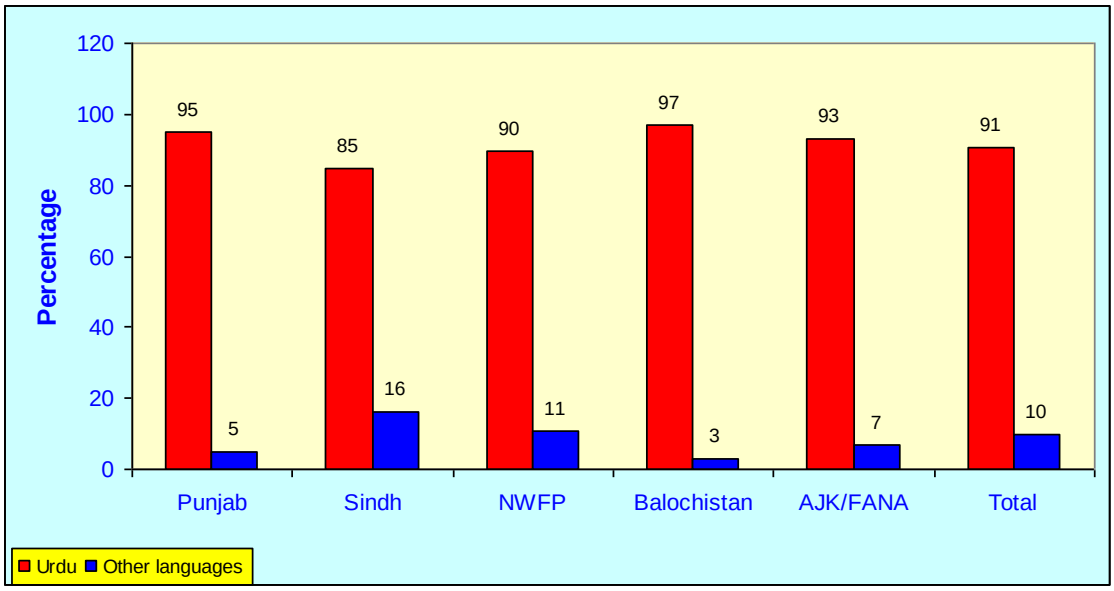
Figure-2.28
Percentage of respondents who listen to FM radio by timing, Pakistan, 2009



Source: Annex Table-2.53 and 2.54

Nine out of ten respondents reported to have been listening to Urdu channels on the FM radio. The proportion of respondents listening to programmes in other languages was highest in Sindh, and presumably-Sindhi (16 percent) while this proportion was 3 percent or less in other regions.

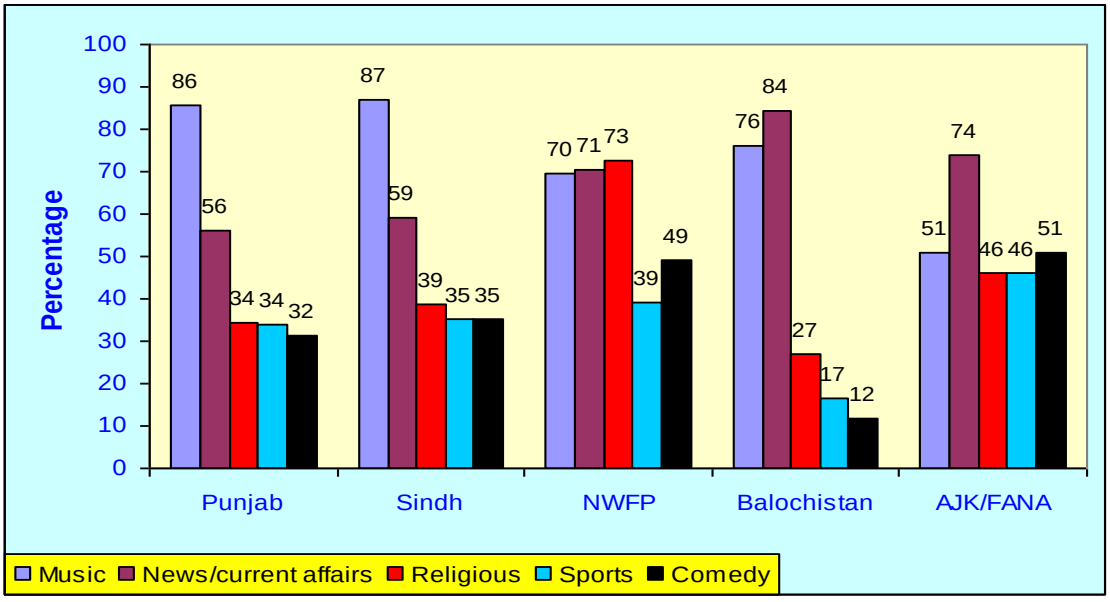
Figure-2.29
Percentage of respondents listening FM radio by language of the programme, Pakistan, 2009



Source: Annex Table-2.59 and 2.60

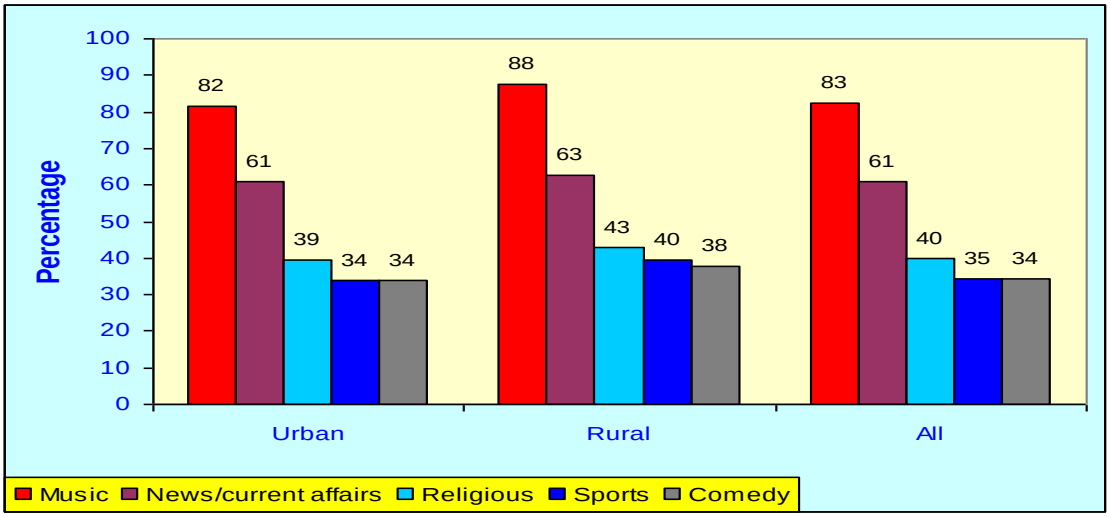
Music programmes are more commonly (83 percent) listened followed by News/current affairs (61 percent) and religious (40 percent) programmes. Music programmes are more popular in Sindh (87 percent), Punjab (86 percent), in rural (88 percent) and urban areas (82 percent). However, in NWFP, religious programmes are more popular where majority of the respondents reported listening to these programmes (73 percent respectively). Majority of respondents in AJK/FANA reported to be listening to news/current affairs programmes more (74 percent) than other programmes.

Figure-2.30
Percentage of respondents by type of preferred channel/programme and region, Pakistan, 2009



Source: Annex Table-2.63 and 2.64

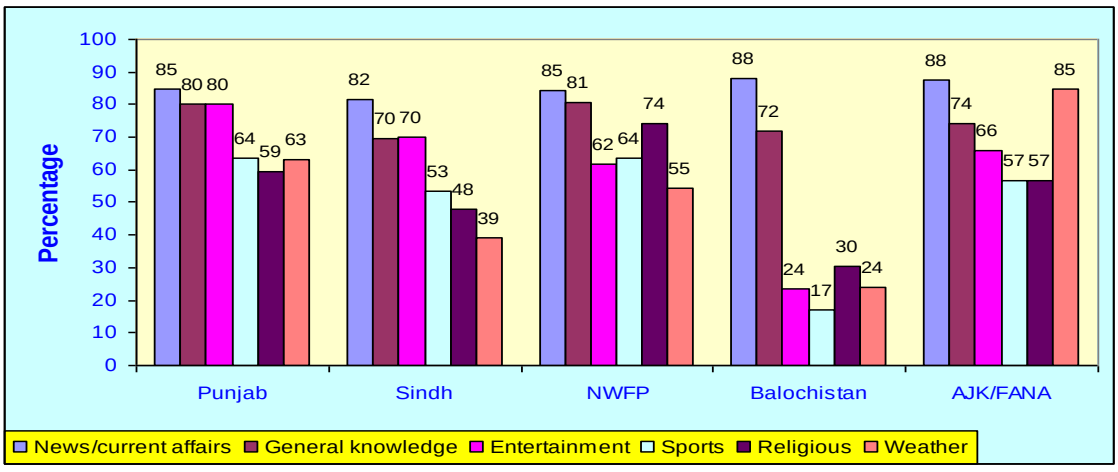
Figure-2.31
Percentage of respondents by type of most listened programme and residence, Pakistan, 2009



Source: Annex Table-2.63 and 2.64

In response to the question whether FM radio programmes are useful for the respondents and their families, the aggregated popularity of the programmes emerges to be that of the news/current affairs programmes rank at number 1 at national and regional level (supported by 86-88 percent respondents). The general knowledge programmes rank at number 2 (ranges from 72-81 percent of the listeners in the country); and entertainment programmes at number 3 (supported by 71 percent of the listeners).

Figure-2.32
Percentage of respondents who consider FM programmes useful for the family by region, Pakistan, 2009



Source: Annex Table-2.65 and 2.66

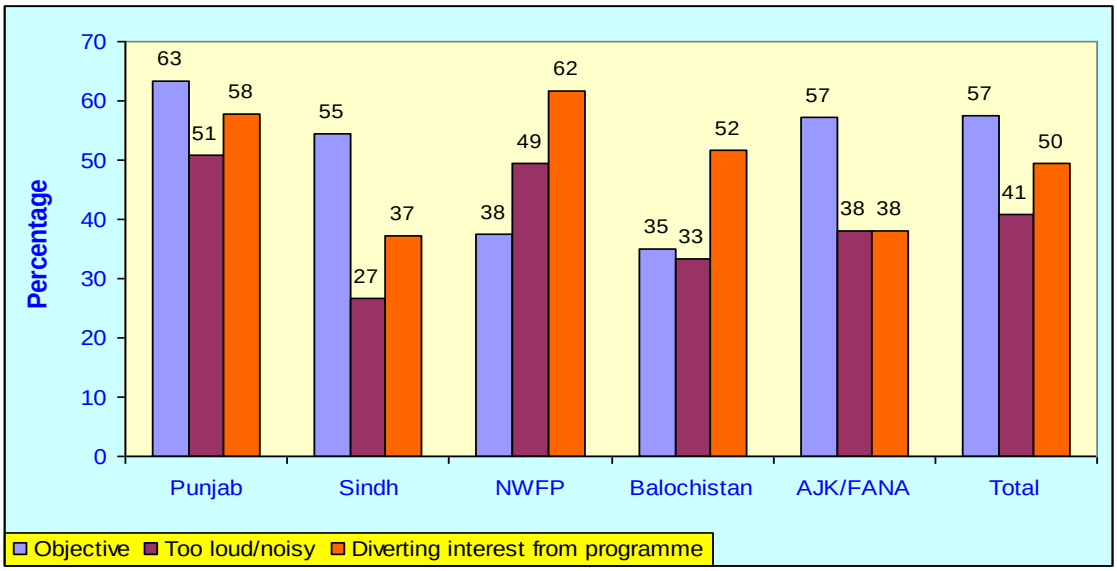
The above three programmers are also considered to be useful in the same order among listeners from Punjab and Sindh provinces and urban and rural dwellers. However, among listeners from NWFP, religious programmes were considered useful at number 3, supported by 74 percent respondents; and in Balochistan education programmes were considered useful at No. 3

supported by 33 percent listeners. While listeners from AJK/FANA, programmes on weather were considered at No 2 supported by 85 percent respondents. In Balochistan only 24 percent respondents reported listening entertainment programme.

2.16 Advertisements on FM Radio

Seven out of ten listeners of the FM radio reported to be listening to advertisements as well. The proportion of such listeners was higher in AJK/FANA (86 percent) followed by Punjab (78 percent), Sindh (70 percent), NWFP (46 percent) and Balochistan (30 percent). About half of the listeners of advertisements believed that advertisements divert interest from the main programmes while 41 percent reported that the advertisements are lousy. However, 57 percent of the listeners also identified the objectivity of these advertisements. The proportion of such listeners was higher in Punjab (63 percent) and lowest in Balochistan (35 percent).

Figure-2.33
Percentage of respondents by their views about the quality of advertisements on FM radio, Pakistan, 2009



Source: Annex Table-2.67 and 2.68

Overall, six out of ten (58 percent) listeners were satisfied with the quality of conversation of the Disk Jockeys (DJ) and mostly considered their conversation as decent. The level of satisfaction was higher among listeners from Balochistan and lowest in NWFP (33 percent). However, one in ten among all listeners was of the opinion that DJs use vulgar language. The proportion of respondents with such opinion about DJs was higher (21 percent) among listeners from AJK/FANA.

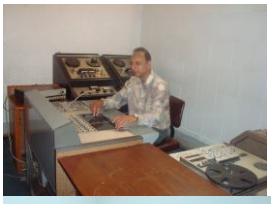
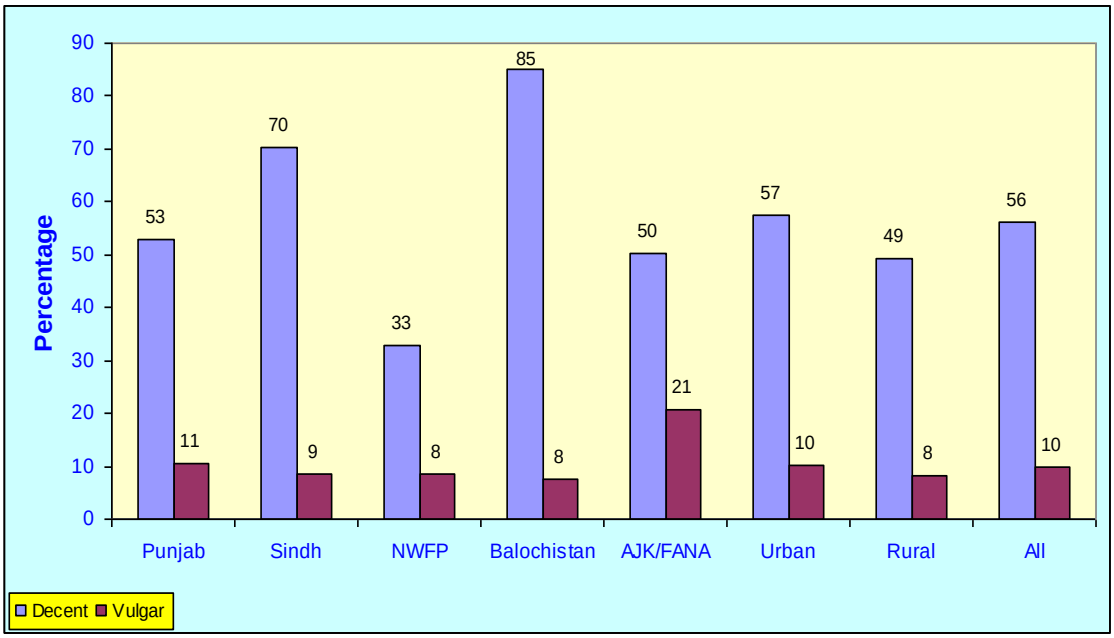


Figure-2.34
Percentage of respondents by their opinion about DJs of the programme, Pakistan, 2009



Source: Annex Table-2.69 and 2.70

Chapter 3

Electronic Media Survey (Business)

3.1 Introduction

Pakistan Electronic Media Regulatory Authority (PEMRA) had awarded a contract to Telecom Engineering and Consultancy House (PVT) Limited (TEACH) for carrying out Market study on the Satellite and Terrestrial TV licensing and FM Radio Broadcasting from household and business respondents.

A questionnaire containing fourteen different questions was framed and got approved from PEMRA. Respondents were interviewed from different business owners, like TV licensees, CTV licensees, FM radio licensees, National Broadcaster (PTV), Landing Right Operators, Prospective future investors in electronic media, TV Production Companies, Media Advertising Companies, Local TV manufacturers, Importers of TV Sets, Dealers / Retail seller shops and Investors in CTV and FM radio broadcasting. The questions were asked from the dealers / retailers regarding the quantity of items, variety of items and affordability of products, expenditure on TV and FM radio items and employees per annum. Moreover, the findings reflect the annual revenue stream of all respondents.

In the last, the respondent's problems, shortcomings and suggestions were asked to reflect the friendly policies.

TEACH surveyors questioned 132 respondents through out the country to evaluate the impact of regulatory policies and future forecasting for the progress of electronic media.

3.2 TV Set Brand and Affordability

A question was asked from TV broadcasters and FM radio broadcasters about adequacy and sufficiency of number of TV channels and FM Radio stations already operating in Pakistan. Purpose of the question was to get a feedback and reaction of existing broadcasters and other stakeholders about PEMRA policy to continue awarding licenses to new players and to attract more investment. About thirty respondents replied that existing TV channels were not enough while 61 parties held a view that existing number of TV channels are sufficient. Twenty-two percent reported that existing number of FM Radio stations are enough while 47 percent replied that those were not enough. Both for TV satellite channels as well as FM Radio stations one third think that number of TV channels and Radio stations were not enough while more than two third think otherwise. It appears that stakeholders have a vested interests and it would be prudent to use data outcome of household survey in this regard for policy making.

In order to check the financial performance of existing i.e. working TV channels and FM Radio stations, a question was framed for broadcasters whether the revenue from their TV channel and /or Radio station was up to the

mark. Purpose was to check if the investment made and business plan prepared by them were yielding expected income results.

Thirty percent replied that the TV channel or FM Radio station was earning revenue which is up to the mark, 65 percent did not agree and said that revenue was not up to the desired mark. Situation reflects a sort of paradox in the industry. On the one side there are a lot of pending applications for new licenses and on the other side it is reported that revenue was not up to the mark. After all Ad Spend revenue have doubled in last five years. In cases where auction has to be held for licenses such as FM Radio stations, bid prices have been going up.

Those who say that revenue is not up to mark are almost in the same proportion as those who thought that existing TV or FM broadcast stations were enough. In the perception of the group the market did not have room for all players to earn revenues as per their plans.

The respondents who thought revenue was not up to mark were further asked to indicate reason for such a state of affairs. They were prompted to pinpoint six possible causes. The summary of their response is given in the Table-3.1.

Table-3.1
Reason for revenue being not up to mark, Pakistan, 2009

Reason	Number of respondents
High investment	62
Too many taxes	63
Low rate of advertisements	30
High rate of advertisements	15
Non availability of investment	51
Too many licenses issued (TV)	30
Too many licenses issued (FM)	21
CTV operator taking away advertisement	23

Source: TEACH Business Survey

The matter needs to be analyzed through in depth study. It goes without saying that investors have to be facilitated so that they get fair return on their investment. On the face of it, the competition is very intense, whereas high end channels have been earning handsome revenue portion while lower end broadcasters are left behind. PEMRA may like to undertake a tariff study of advertisement rates and prescribe a ceiling and floor level for advertisement tariff. In principle decision needs to be taken more towards cost based tariff. Comparison of advertisement rates of different TV channels show big variation. However, PEMRA is cautioned against putting in place any measures which may adversely affect face market mechanism. Nevertheless, issues indicated in Table-3.1 above like too many taxes and non-availability of investment are such that regulator has to rise to the occasion and come to their help.

In response to a question about staff strength and employment in the sector, business respondent data shows 33 percent increase in employment over last year in overall context. TV channels broadcasters have indicated 44 percent increase in employment in one year. CTV operators reported employment increase by 30 percent. The development in electronic media has

been responsible for increase in employment opportunities. The total employment in the sector and its projections till year 2015 have been worked out and given in Chapter-7.

Retailers sell television sets and other media products like antennas, decoders and accessories. They are the relevant people who know about preference of the purchasers in the matter of brand, size and price. A question was asked from them about the affordable price which the customer likes to pay for a TV set. The data shows distribution of customers according to the price of the product paid as given in Table-3.2.

Table-3.2
Affordability of price for TV set, Pakistan, 2009

(Percent)

Below Rs.5000	From Rs. 5001 to Rs. 10000	From Rs. 10000 to Rs. 20000	From Rs. 20001 to Rs. 40000	From Rs. 40001 to Rs. 100000	Above than Rs.100000
33.3	22.2	15.2	20.3	6.5	2.5

During business survey, it is noted that more than twenty five companies are manufacturing TV sets in Pakistan. On enquiry from the retailer, it was found out that a small 14" Chinese made TV set ranges between Rs.2,700 to Rs.5,000 while a local company's branded TV set is available in the range of Rs 6,500/-. This is the most popular price range. Next popular price range is Rs.5,001 to Rs.10,000 which was given as 22.2 percent by the retailers followed by Rs.20,000 to Rs.40,000 which is 20.3 percent. TV sets costing Rs.100, 000/- and above are reported to be only 2.5 percent customers. Price range between Rs.40, 000/- to Rs.100, 000/- has 6.5 percent customers. These are higher end customers. The above survey findings further reveal that range of TV sets of the price of Rs. 10,000/- to Rs.40, 000/- attracts 15.2 percent customers.

A breakup of the retailers' merchandise which is sold by them has also been analyzed. The 67.5 percent of the sales consists of TV sets, 32.4 percent sales are in terms of other devices like boosters, amplifiers, antennas and accessories related with TV sets. Five percent sales consist of satellite Antennas. 7.8 percent sales of TV monitors and only 3.5 percent sales of radio sets have been reported. In addition to that about 3 percent sales of other items are reported. Lesser percentage of radio sets should not be considered surprising. Radio sets are usually part of automobile these days. Thirty two percent of the mobile phone subscribers use their mobile phone hand sets for the purpose of radio listening according to PTA survey. From the above results of business survey it appears that television sets dominate the business of these retailer Shops.

Respondents from TV set retailers show that they sell ten makes/brands of TV sets. The popular brands are indicated as Sony, LG, Samsung, Panasonic, Phillips and Nobel. Least popular makes are reported as Videocom, Oneida and Orion. The Other choice of customer appears to be Toshiba and

National. Table-3.3 shows in percentage terms, the make of TV sets sold by retailers reported during business survey.

Table-3.3
Make of TV Sets, Pakistan, 2009

Make	Percent
Sony	16.5
LG	13.6
Samsung	11.7
Panasonic	11.0
Phillips	9.9
Nobel	7.3
Videocom	2.2
Orion	1.1
Onida	0.7
Others	26.0

As explained earlier in the household survey findings, the popular brands of TV sets indicated by respondent are given in Table-3.4.

Table-3.4
Popular brand of TV sets in household survey, Pakistan, 2009

Make	Percent
Sony	33
LG	24
Phillips	12.2
Panasonic	12.1
National	9.2
Nobel	7.5
Samsung	6.5

The data collected from household survey depicts an historic record. The TV set make used in household survey indicated earlier popular brands which have already been in their possession, whereas retailer response is an indicative of TV brands in demand at present. Currently as may be seen from the business survey buyers' choice has changed. The reason for which may be considered price or stock availability or impact of market campaign.

3.3 Media Advertising Companies

The increasing trend in Ad Spend reveals that the advertisement companies which work as conduit for advertisement placement in media outlets has increased volume of business in hand. To handle such business activity, enhanced avenues of employment have been reported. The employees in Advertising firm not only cater for electronic media related business but also deal with print media, out door media and direct marketing etc. As electronic media Ad Spend volume is 50 percent of the total, it is reasonable to assume that 50 percent of their employees are dealing with electronic media business. The employment generated in the Advertising business has been taken in the category of indirect employment along with the employment in the content production houses and in the manufacturing sector etc.

There are a total of 126 advertising companies which are accredited to APNS. Some are large scale companies with about 200 employees while others are very small one with hardly 10 employees as reported in the business

survey. FGD discussion makes us to believe that on an average there are 25 employees in a company. The total employment is estimated to be 126 x 30 x ½ = 1890 personnel. New companies are also being set up by the investors. In the forecast of employment three additional companies per year have been taken into account. Media advertisement income consists of fifteen percent of Ad Spend volume as commissions.

3.4 Programme Production Companies

There are reportedly thirty Programme Production houses in the country that produce software and content for T.V. and Radio broadcasters. Produce dramas, films documentaries, music and advertisement materials etc. Usually these production houses sell their programmes to the broadcasters to the companies, who purchase air time from the TV channel owner. They earn money also by selling the recorded CDs and films. Copy right payments are also beginning to become a norm in the market. These production houses employ both technical as well as artist type of personnel. The total employment in these production houses is reported to be around 1000. In addition to (core staff) these companies make use of free lance artists like writers and actors etc. who have not been taken into account.

As the number of TV channels and FM radio stations increase there will be more business for these production companies and consequently further employment is expected to generate. Volume of production in the houses undergoes ebb and flow. In business survey media production companies reported content development of Rs.70 million in a year each. The size of business based on their statistics works out to be Rs.2.1 billion in a year.

3.5 Air Time Purchasers

There are 11 companies who are doing airtime purchase business with TV channels. For many of them airtime purchase is not there sole business and they take part in other media business activities as well

In the business survey it has been reported that an airtime company purchases airtime worth about Rs.50 million per year. Programmes during the purchased airtime are broadcast, and income is generated through sponsorship or direct advertisement. Total size of airtime business is estimated as Rs.500 million. They do not need a large team of staff and generally 15-20 persons are enough Number of persons employed in this business is nearly 200. As the number of TV channels increase the airtime business is likely to prosper

3.6 TV Manufacturing Companies

According to Pakistan Electronic Manufacturers Association there are 10 factories who are manufacturing television sets and other media equipment in Pakistan. According to them they are producing 1,000,000 TV sets per annum. In the business survey, employments by two TV manufacturing companies have been reported as 600 and 550 respectively. Based on this empirical evidence the work force of 10 factories has been estimated to be 6000. In addition there is an informal sector which manufactures satellite dishes and decoders. Such cottage industry type units are assembling low cost TV sets. The turnover of TV set manufacturing units is estimated to be Rs.25 billion per

annum. The informal sector (Rs.1.6 billion) is included in this figure. Each such unit employs technical and other staff. It is estimated that about same number as in the major manufacturing units is working in the informal sector. TV manufacturing industry has high prospects as market potential exists for new subscribers for replacements of existing TV sets and other modern gadgets with new features. There is a need to look into their difficulties regarding import of electronic components and resolve other long standing issues.

Annexes

Annex-I

Major Occupational Codes

10. **Senior Professionals**
    11. Elected Representatives (MNAs, Senators, MPAs, District Nazim)
    12. Business, Industrial and Corporate Sector Executives, Bankers, Investors, Stockcos, Executives.
    13. Marketing and Media executives
    14. Print, Electronic, Senior Media Personnel
    15. Professors
    16. Senior Doctors, Specialists
    17. Senior Engineers, Architects
    18. Senior Lawyers, Solicitors, Advocates of High Court and Supreme Court
    19. Senior Accounts Experts (CA & MA)

20. **Junior or Mid-Level Professionals**
    21. Teachers, college & professional college teachers, doctors, engineers, overseers, supervisors, sales/marketing officials
    22. Advocates, lawyers, solicitor
    23. General health providers (Nurses, Para medics, Hakims, Homeopaths)
    24. Accountants, cashiers, auditors, mid level bureaucrat
    25. News, Journalist, correspondents, journalist, designer in printing, advertising, media personnel, photographer.
    26. Social workers
    27. Local body elected representatives/ councilor.
    28. Oversees Worker

30. **Business**
    31. Whole Sale & Retail business (carpenter, electronic, construction material and tile, sanitary, electric, departmental store, publisher, printer etc)
    32. Shop keeper (grocery general merchandise, chemist, travel agents, sales officer.
    33. Estate agents, property dealers, brokers (Arty), middle man, contractor.
    34. Restaurant and other eatable shop, Nan-shop, milk shop.
    35. Clinic, medical centre & other health related
    36. Mechanic, or any other repair shop
    37. Small industry or factory owner
    38. Vendor/ Hawkers and other related workers
    39. Salesman, tailor, cushion & upholstery

40. **Service Related Workers**
    41. Utility workers, builders/repairers (plumbers, electricians, mechanics, carpenters, masons, lineman of gas, electric, phone companies.
    42. Taxi and Rickshaw drivers, chauffeurs van & pickup, bus & truck drivers
    43. Cook, domestic servants, waiter
    44. Security & law and order maintainers

45. Repair workers (bicycles, motorcycles, cars, trucks, AC fridge, electronic & electrical gadgets watch etc)
46. Barber
47. Transporters

50. **Office Workers**
    51. Clerks, cashiers, accounts clerks, billing clerks, Receptionists, Telephone Operator, call centre workers, typist, computer clerk
    52. Private company office workers, manager in shops.
    53. Government servant
    54. Semi Government servant
    55. Peon

60. **Skilled Worker**

70. **Non-Skilled worker/ labourer**
    71. Daily wages earners
    72. Constructor workers
    73. Helpers / workers employed in shops, small factories / industries workers.
    74. Unskilled workers

80. **Farmers Cultivators**
    81. Farmers
    82. Farm labourer
    83. Cattle grazer, milking man
    84. Other agriculture worker
    85. Seed related worker
    86. Pesticiding
    87. Dairy farm, cattle raiser
    88. Bee keeper, flower grower

90. **Persons not working**
    91. Students
    92. House wives
    93. Disabled
    94. Senior citizens / Retired persons
    95. Landlords

Annex-II

Districts of various Provinces/Region involved in the Survey

Punjab	Sindh	NWFP	Balochistan	AJK & Northern Area
Attock	Ghotki	Abbottabad	Khuzdar	Muzafarabad
Gujranwala	Hyderabad	Bannu	Loralai	Mirpur
Bahawalpur	Karachi	Charsaddah	Quetta	Gilgit
D.G.Khan	Khairpur	D.I.Khan	Sibi	Diamir
Faisalabad	Larkana	Haripur	Lasbela	Bhamber
Gujrat	Mirpur Khas	Kohat		
Islamabad	Nawabshah	Mardan		
Jhang	Qamar Shadadkot	Peshawar		
Jhelum	Sukkur	Swabi		
Kasur				
Lahore				
Lodhran				
Multan				
Muzaffargarh				
Rahim Yar Khan				
Rajanpur				
Rawalpindi				
Sargodha				

Total Number of Districts involved is 46 Districts

Annex-3

Household Questionnaire

A. GENERAL

	Day	Month	Year		Hours	Minutes
Date:			0 8	**Interview started at:**		

Province:	Punjab	Sindh	NWFP	Balochistan	Islamabad	NA&AJK
	1	2	3	4	5	6

District (name): _____

Area: i) Rural [1] ii) Major Urban (big city) [2] iii) Other Urban (small city/town) [3]

iv) Naey Abadi [4] v) Mohallah [5] vi) Regular Settlement [6]

vii) Kachi Abadi [7]

Name and Address of Respondent: _____

Telephone No. (if any): _____

B. BACKGROUND INFORMATION OF RESPONDENT/HOUSEHOLD HEAD

Q.1 **Respondent's Sex** Male [1] Female [2]

Q.2 **Respondent's Age** [ ] years

Q.3 **Marital Status of Household:** Single [1] Married [2]

Q.4 **Respondent's Educational Qualification:**

i) No education [1] ii) Under matric [2] iii) Matric / Intermediate [3] iv) Graduate [4]

v) Master and above [5]

Q.5 **What is the size of the Household Family in terms of number of persons?**

i) Less than 4 persons [1] ii) Between 4 and 7 persons [2] iii) More than 7 persons [3]

Q.6 **Makeup of the Household in terms of age and viewership:**

i)	up to 5 years age of children	Yes [1]	No [0]	Number [ ]
ii)	6 years to 12 years age of children	Yes [1]	No [0]	Number [ ]
iii)	13 years to 18 years age of persons	Yes [1]	No [0]	Number [ ]
iv)	19 years to 35 years age of persons	Yes [1]	No [0]	Number [ ]
v)	36 years and above age of persons	Yes [1]	No [0]	Number [ ]

Q.7 **Number of earning members of the Household** Number ☐☐

Q.8 **Total monthly income of the Household** Rs. ☐☐☐☐☐☐☐

Q.9 **Occupation / profession / business of Household head** *(Specify)* _____ ☐☐

C. TV VIEWERS

Q.10 **Do you have a Television (TV) set?** Yes ☐1 No ☐0

Q.10 (a) **If not, what is the reason for not having TV set?**

i) Cannot afford ☐1 ii) No time to view TV ☐2 iii) Do not like TV ☐3

iv) No interest ☐4 v) Any other (Specify) _____ ☐5

Q.10 (b) **Would you like to buy a TV set in future?** Yes ☐1 No ☐0

Q.11 **Number of TV sets in the Household?** ☐☐ Number

Q.12 (a) **Which size of TV set are you using at Household?**

i) 14" ☐1 ii) 21" ☐2 iii) 25" ☐3 iv) 29" ☐4 v) Other specify _____ ☐5

Q.12 (b) **Which make of TV set are you using at Household?**

i) Local ☐1 ii) Imported ☐2

Q.13 **Which manufacturer TV set you are using?**

Manufacturer	LG	Toshiba	Philips	Sharp	National	Sony	Sanyo	Noble	PC	Onida	Orion	Singer
	01	02	03	04	05	06	07	08	09	10	11	12

Manufacturer	Samsung	Panasonic	Others	
	13	14	15	

Q.14 **Do you have a Cable Television (CTV) connection?** Yes ☐1 No ☐0

Q.14 (a) **If yes, which type of CTV connection?**

i) Coaxial ☐1 ii) Optic Fibre ☐2 iii) Wireless ☐3 iv) IP TV ☐4

v) DTH ☐5 vi) Others specify _____ ☐6

Q.15 **Number of TV channels available on CTV connections at Household** Number ☐☐

Q.16 **Monthly fee of the CTV connection** Rs. ☐☐☐

Q.17 **Do you watch TV regularly?** Yes ☐1 No ☐0

Q.17 (a) **If yes, how much time (hours) do you spend on watching TV and at what time during a day (24 hours)?**

					Hour	Minute
i)	Morning	Yes 1	No 0	Duration		
ii)	After noon	Yes 1	No 0	Duration		
iii)	Evening	Yes 1	No 0	Duration		
iv)	At night	Yes 1	No 0	Duration		

v) No specific time 1

Q.18 **Which type of TV channels do you usually watch?** (indicate Code from the list) (i) _____ (ii) _____

(iii) _____ (iv) _____ (v) More _____

Q.19 **Which type of TV channels are your favourite?** (indicate Code from the list) (i) _____ (ii) _____

(iii) _____ (iv) _____ (v) More _____

Q.20 **Would you like that more TV channels should be available?** Yes 1 No 0

Q.21 (a) **If yes, what type of TV channels would you like to add** (indicate Code from the list)

(i) _____ (ii) _____ (iii) _____ (iv) _____ (v) More _____

Q.21 (b) **If not, do you think existing number of TV channels available are too many?** Yes 1 No 0

Q.22 **Would you like to see more Pakistani TV channels?** Yes 1 No 0

Q.23 **Do you watch TV channels in regional languages (Punjabi, Sindhi, Balochi, Saraiki, Pushto, Hindko,**

Yes 1 No 0 Specify _____

Q.23 (a) **If yes, indicate type of regional language TV channels you watch?**

i) Punjabi 1 ii) Sindhi 2 iii) Balochi 3 iv) Saraiki 4

v) Pushto 5 vi) Hindko 6 vii) Potohari 7

Q.24 **Would you like to more regional language TV channels in the country?**

i) Punjabi 1 ii) Sindhi 2 iii) Balochi 3 iv) Saraiki 4

v) Pushto 5 vi) Hindko 6 vii) Potohari 7

Q.25 **Would you like to add more foreign language channels in CTV?** Yes 1 No 0 Specify: _____

Q.26 **Do you think Pakistani TV channels are useful for you and your family members in respect of;**

i)	General knowledge	Yes 1	No 0	ii)	News/Current affairs	Yes 1	No 0		
iii)	Sports	Yes 1	No 0	iv)	Food/Cooking	Yes 1	No 0		
v)	Entertainment	Yes 1	No 0	vi)	Education	Yes 1	No 0		
vii)	Travel	Yes 1	No 0	viii)	Business	Yes 1	No 0		
ix)	Religion	Yes 1	No 0	x)	Others (Specify)	_____			

Q.27 **Do you think there should be local/community TV channels to focus on local problems and issues?**

Yes 1 No 0

Q.27 (a) **If yes, how many local/community TV channels should be there at a place?** Number ☐☐

Q.28 **What should be the language of such TV channels?**

i) Urdu 1 ii) Local/Regional language 2 iii) English 3 iv) Mixed language 4

Q.29 **Should these local TV channels be available through CTV or Terrestrial Antenna (like PTV)?**

i) Through CTV Yes 1 No 0 ii) Terrestrial antenna Yes 1 No 0

Q.30 **Do you watch advertisements on TV'** Yes 1 No 0

Q.31 **Are you satisfied with quality/standard of advertisement?** Yes 1 No 0

Q.31 (a) **If not, indicate reason:**

i) Lack of objectivity 1 ii) Vulgarity 2 iii) Indecency 3

iv) Excessive duration 4 v) Others 5 _____

Q.32 **Please suggest improvement measures to make TV channels programme more useful.**

i) in terms of contents (programme) ☐☐ _____

ii) advertisement ☐☐ _____

iii) entertainment ☐☐ _____

iv) any other specify ☐☐ _____

D. FM RADIO BROADCASTING

Q.33 **Do you listen to FM Radio Broadcast?** Yes 1 No 0

Q.34 **At what time do you mostly listen to FM Broadcast?**

i) Morning 1 ii) Afternoon 2 iii) Evening 3 iv) Late night 4 v) No specific time 5

Q.34 (a) **Where do you listen to FM Radio Broadcast?**

i) House Yes [1] No [0] ii) Office Yes [1] No [0]

iii) Car Yes [1] No [0] iv) Business place Yes [1] No [0]

v) Others (specify) _____ [ ]

Q.35 **Number of radio sets in the Household** Number [ ][ ]

Q.36 **Which type of radio set you have?**

a. i) Local [1] ii) Imported [2]

b. i) Desk type [1] ii) Car [2] iii) Portable type [3] iv) Tape recorder/Radio [4]

v) Others (Specify) _____ [ ]

Q.37 **In which language you prefer to listen FM Broadcast programme?**

i) English [1] ii) Urdu [2] iii) Others (Specify) [3] _____

Q.38 **Which type of programme you mostly listen to?**

i) Music [1] ii) Comedy [2] iii) Sports [3]

iv) News/Current affairs [4] v) Weather [5] vi) Social matters [6]

vii) Health related [7] viii) Drama [8] ix) Religious [9]

x) Others (Specify) _____ [10]

Q.39 **Do you think FM Radio Broadcast has proved useful for you and your family in respect of:**

i) General knowledge Yes [1] No [0] ii) News/Current affairs Yes [1] No [0]

iii) Sports Yes [1] No [0] iv) Food/Cooking Yes [1] No [0]

v) Entertainment Yes [1] No [0] vi) Education Yes [1] No [0]

vii) Travel Yes [1] No [0] viii) Business Yes [1] No [0]

ix) Weather Yes [1] No [0] ix) Religious Yes [1] No [0]

x) Others (Specify) _____ [ ]

Q.40 **Do you listen to advertisements on FM Radio Broadcast** Yes [1] No [0]

Q.40 (a) **If yes, are the advertisements:-**

i) Objective Yes [1] No [0] ii) Too loud/noisy Yes [1] No [0]

iii) Diverting interest from the main programme Yes [1] No [0] iv) Others _____ [ ]

Q.41 **Are you satisfied with quality of conversation of DJ (Disk Jockey)?** Yes [1] No [0]

Q.41 (a) **Do you find DJ:** i) Decent Yes [1] No [0] ii) Vulgar Yes [1] No [0]

Q.42 **Please suggest improvement measures to make FM Radio Broadcasting more useful**

i) In terms of contents(programmes) [ ][ ] _____

ii) Advertisement [ ][ ] _____

iii) Entertainment [ ][ ] _____

iv) Others (specify) [ ][ ] _____

Q.43 **If you have any suggestions, tell frankly:**

[ ][ ] _____

_____

_____

Hours Minutes

Time taken on interview: [ ][ ] [ ][ ]

Interviewer's remarks, if any: [ ][ ] _____

_____

_____

Signature: _____ Date: [ ][ ][ ][ ][ ][ ]

Interview ended at: [ ][ ] hrs. [ ][ ] mins.

Name of Interviewer: _____

Checked by Supervisor: _____

Supervisor's comments, if any: _____

Data entered by (Name): _____

Data entered checked by: _____

CODES FOR TYPE OF TV CHANNELS

Type of TV Channel		Code		Type of TV Channel		Code	
i)	News	0	1	ii)	Music	0	2
iii)	Drama	0	3	iv)	Movie	0	4
v)	Sports	0	5	vi)	Current affairs	0	6
vii)	Mixed programmes	0	7	viii)	Animal	0	8
ix)	History	0	9	x)	Geographic	1	0
xi)	Religious	1	1	xii)	Education	1	2
xiii)	Cartoon	1	3	xiv)	Children programmes	1	4
xv)	Cooking Programmes	1	5	xvi)	Scientific programmes	1	6
xvii)	Political programmes	1	7	xviii)	Parliament coverage	1	8
xix)	Agricultural programmes	1	9	xx)	Judiciary channels	2	0
xxi)	English language	2	1	xxii)	Persian language	2	2
xxiii)	Arabic language	2	3	xxiv)	others	2	4

Annex-4

Business Questionnaire

I General

	Day	Month	Year		Hours	Minutes
Date:			0 8	**Interview started at:**		

Province:	Punjab	Sindh	NWFP	Balochistan	Islamabad	NA&AJK
	1	2	3	4	5	6

District (name): _____

Area: i) Rural [1] ii) Major Urban (big city) [2] iii) Other Urban (small city/town) [3]

iv) Naey Abadi [4] v) Mohallah [5] vi) Regular Settlement [6]

vii) Kachi Abadi [7]

Name and Address of Respondent: _____

_____

Telephone No. (if any): _____

1 Respondent / Business Entrepreneure:

A. TV, CTV and FM Licensees

i)	TV Licensee	Yes [1]	No [0]
ii)	CTV Licensee	Yes [1]	No [0]
iii)	FM Radio Licensee	Yes [1]	No [0]
iv)	National Broadcaster (PTV)	Yes [1]	No [0]
v)	Landing Right Operator	Yes [1]	No [0]

B. Investors

i)	Prospective future investor in electronic media	Yes [1]	No [0]
ii)	TV Production Company	Yes [1]	No [0]
iii)	Media Advertising Company	Yes [1]	No [0]
iv)	Local TV manufacturer	Yes [1]	No [0]
v)	Importers of TV Sets	Yes [1]	No [0]
vi)	Dealers / Retail Sellers Shops	Yes [1]	No [0]
vii)	Investors in CTV	Yes [1]	No [0]
viii)	FM Radio Broadcasters	Yes [1]	No [0]

2 How many items do you sell annually?

For dealers / Retail Seller Shops

i)	TV Sets		ii)	Other devices			
iii)	Terrestrial / Satellite Antenna		iv)	PC Monitor as TV			
v)	Radio Sets		vi)	Others (Specify)			

3 Which manufacturer's TV and Radio Sets do you sell?

For dealers / Retail sellers shops

Manufacturer	LG	Toshiba	Philips	Sharp	National	Sony	Sanyo	Noble	PC	Onida	Orion	Singer
	01	02	03	04	05	06	07	08	09	10	11	12

Manufacturer	Samsung	Panasonic	Videocom	Others	
	13	14	15	16	

4 What is the affordability of TV and Radio Products?

For dealers / Retail seller shops

i)	Below Rs.5000	Percent	ii)	From Rs.5001 to Rs.10000	Percent	
iii)	From Rs.10001to Rs.20000	Percent	iv)	From Rs.20001 to Rs.40000	Percent	
v)	From Rs.40001 to Rs.100000	Percent	vi)	Above Rs.100001	Percent	

5 What has been your expenditure on following TV Broadcasting and Radio Broadcasting items and empoye per annum?

a. Radio / TV stakeholders

i)	License	Rs.	Million
ii)	Capital Expenditure	Rs.	Million
iii)	Content Development	Rs.	Million
iv)	Purchase of Air time	Rs.	Million
v)	Training of Manpower	Rs.	Million

b. Retailers / Stakeholders

i)	Import of TV / Equipment	Rs.	Million
ii)	Employees	Rs.	Million
iii)	Capital Cost	Rs.	Million
iv)	Recurring	Rs.	Million

6 Are present number of TV Channels and FM Broadcast stations enough for TV viewing and FM programmes for listening?

For TV and FM operators

a)	Present number of TV Channels	i)	Not enough	1	ii)	enough	0	
b)	Present number of FM Broadcast Stations	i)	Not enough	1	ii)	enough	0	

7 What are your revenue streams (amount) annually?

A.	Percentage variation in the revenue stream over 2 last years	Up	
		Down	

B. Television Broadcast

i)	Commercial	Rs.		Million
ii)	Advertisement	Rs.		Million
iii)	Subscription			
	a) Current	Rs.		Million
	b) Future	Rs.		Million
iv)	Any other _____	Rs.		Million

C. FM Radio Broadcast

i)	Commercial	Rs.		Million
ii)	Advertisement	Rs.		Million
iii)	Any other _____	Rs.		Million

8 What are your revenue prospects for future?

A Television Broadcast

		Percentage increase per year	
i)	Commercial		Percent
ii)	Advertisement		Percent
iii)	Any other _____		Percent

B FM Radio Broadcast

		Percentage increase per year	
i)	Commercial		Percent
ii)	Advertisements		Percent
iii)	Any other _____		Percent

9	**Is TV and FM Marketing revenue up to mark?**	Yes 1	No 0	
	For all relevant stakeholders			
9(a)	**If TV and FM Marketing revenue is not up to mark, reasons for shortfall?**			
	i) High investment	Yes 1	No 0	
	ii) Too many taxes	Yes 1	No 0	
	iii) Low charges of advertisement	Yes 1	No 0	
	iv) High charges of advertisement	Yes 1	No 0	
	v) Non-availability of investment in the country	Yes 1	No 0	
	vi) Too many licenses already issued for TV Broadcasting	Yes 1	No 0	
	vii) Too many licenses already issued for FM Broadcasting	Yes 1	No 0	
	viii) CTV operators are taking away the advertisement	Yes 1	No 0	
10	**What are the problems you face in marketing on TV and FM Radio?**			
	For all relevant stakeholders			
	_____			
	_____			
	_____			
	_____			
11	**How many employees you have in your organization?**			
	i) Past year ☐☐☐☐ Number	ii) Present ☐☐☐☐ Number		
12	**What are your future expansion plans for next ten years? (Optional)**			
	For all relevant stakeholders			
	i) Establishment of new TV channels and FM Radio Broadcast Stations: _____			
	ii) Infrastructure _____			
	iii) Contents development _____			
	iv) Proposed Investment in terms of foreign and local financing	a) Foreign Rs. ☐☐☐☐ Millions		
		b) Local Rs. ☐☐☐☐ Millions		
		c) No future plan 1		

13 Do you find may any regulatory problems in business?
For all relevant stakeholders

14 **Do you want change in Regulatory Policy for TV and FM Radio Broadcasting?**
For all relevant stakeholders

If you have any suggestions, tell frankly:

Signature: _____ Date: ☐☐☐☐☐☐☐☐

Interview ended at: ☐☐ hrs. ☐☐ mins.

Name of Interviewer: _____

Checked by Supervisor: _____

Supervisor's comments, if any: _____

Data entered by (Name): _____

Data entry checked by: _____

Annex Tables

Annex Table 2.1
Household respondents by Gender, Residence and Region, Pakistan, 2009

(Percent)

		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Total
Residence	Urban	85.7	88	81.5	85.1	63.8	84.8
	Rural	14.3	12	18.5	14.9	36.2	15.2
Gender	Male	79.6	87.4	92.8	92.8	91.1	84.9
	Female	20.4	12.6	7.2	7.2	8.9	15.1

Annex Table 2.2
Age group of household respondents by Region, Pakistan, 2009

(Percent)

Age group	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Total
< 20	8.8	3.4	2.8	1.4	6.1	5.9
20 - 29	36.2	28.2	34.6	36.1	32.4	33.5
30 - 39	24.6	37.1	35.4	46.2	29.1	31
40 - 49	20.6	24.3	20	14.4	23	21.4
50 - 59	7.5	5.4	6.2	1.4	5.6	6.4
60 +	2.2	1.6	1	0.5	3.8	1.8

Annex Table 2.3
Marital status of household respondents by Region, Pakistan, 2009

(Percent)

Marital Status	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Total
Single	39.4	28	31.5	29.8	29.1	34
Married	60.6	72	68.5	70.2	70.9	66

Annex Table 2.4
Educational qualification of household respondents by Region, Pakistan, 2009

(Percent)

Educational level	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Total
No education	8.5	8.3	2.7	7.2	12.7	7.7
Under matric	21.2	17.1	13.3	13	19.2	18.4
Matric/intermediate	34.2	31	37.2	37.5	31.9	33.7
Graduate	24.6	29.1	32	29.3	26.8	27.4
Master and above	11.5	14.5	14.8	13	9.4	12.8

Annex Table 2.5
Family size of household respondents by Region, Pakistan, 2009

(Percent)

Family size	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Total
Less than 4 persons	10.1	12.8	13.3	4.8	7.5	11.1
Between 4 and 7 persons	62	57.5	61.4	50	54.5	59.8
More than 7 persons	27.9	29.7	25.3	45.2	38	29.2

Annex Table 2.6
Occupation of household respondents by Region, Pakistan, 2009

(Percent)

Occupation	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Total
Senior management	6.2	5	0.3	4.8	1.9	4.7
Junior or mid-level professionals	12.4	15.2	16.6	25.5	17.8	14.7
Business	30	29.2	25.4	22.1	46.5	29.4
Service related workers	6.6	7.7	2.7	12	6.6	6.5
Office worker	21.3	27.4	46.7	23.6	19.7	27
Skilled worker	0.3	0.3				0.2
Non-skilled worker	6.7	6.3	5.3	6.3	0.9	6.1
Farmers cultivator	6.7	3.5	0.9	5.8	6.1	4.8
Persons not working	9.8	5.3	2.1	-	0.5	6.5

Annex Table 2.7
Makeup of household in terms of age and viewership by Region, Pakistan, 2009

(Percent)

Age	No. of persons viewing TV	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
							Urban	Rural	
Upto 5-years of children	No person	52.7	46.5	42.6	29.3	48.8	48.7	45.3	48.2
	1 person	29.6	27.6	37.9	28.8	30	30.5	29.1	30.3
	2 persons	12.7	18.8	16.3	29.8	18.3	15.4	18.9	16
	3 persons	3	5	3.1	7.7	2.3	3.5	4.9	3.8
	4 persons	1.1	1.4	0.1	3.4	0.5	1	1.3	1.1
	5 persons and above	0.9	0.7		1		0.7	0.5	0.7
	Mean	0.7	0.9	0.8	1.3	0.8	0.8	0.9	0.8
06 - 12 years of children	No person	44.8	44.3	35.1	31.7	33.3	42.5	39.9	42.1
	1 person	29.4	24.8	32.4	27.9	31	28.5	28.9	28.5
	2 persons	19.3	23.2	28.1	29.8	26.3	22.1	24.6	22.5
	3 persons	4.9	5.9	3.7	6.7	8	5.2	5.2	5.2
	4 persons	1.2	1.4	0.6	3.4	1.4	1.3	1	1.3
	5 persons and above	0.3	0.5		0.5		0.3	0.4	0.3
	Mean	0.9	1	1	1.2	1.1	1	1	1
13 - 18 years of persons	No person	35.4	42.5	47.2	31.3	22.1	38.7	37.8	38.6
	1 person	29.1	26.6	27.5	28.8	27.7	28.5	25.6	28.1
	2 persons	24	19.9	18.3	21.6	38.5	21.9	25.6	22.5
	3 persons	8.7	5.6	5.7	11.5	10.8	7.6	7.4	7.5
	4 persons	2.3	1.4	1.3	6.7	0.5	2.2	1.2	2
	5 persons and above	0.5	3.9			0.5	1.2	2.3	1.4
	Mean	1.2	0.9	0.9	1.3	1.4	1.1	1.1	1.1
19 - 35 years of persons	No person	11.8	20.2	24.1	3.4	29.6	15.8	20.4	16.5
	1 person	24.2	23.9	26.3	15.4	25.4	24.7	20.9	24.1
	2 persons	38.6	34.4	35.6	41.3	33.8	37	36	36.8
	3 persons	14.3	8.9	8.4	20.2	9.9	12	11.4	11.9
	4 persons	6.4	4.3	3.5	10.6	0.9	5.2	5.3	5.3
	5 persons and above	4.8	8.3	2.1	9.1	0.5	5.3	5.9	5.4
	Mean	2	1.6	1.5	2.5	1.3	1.8	1.7	1.8
36 years and above	No person	13.4	21.3	22.1	30.3	12.7	17.6	18.3	17.7
	1 person	20.5	21.3	16.6	27.4	11.3	20.4	17.9	20
	2 persons	52.6	42.1	52.1	32.2	58.7	48.7	49.7	48.9
	3 persons	9.1	6	7.9	8.2	14.6	8.4	7	8.2
	4 persons	3.5	2.6	1	0.5	1.9	2.7	2.5	2.7
	5 persons and above	0.9	6.7	0.3	1.4	0.9	2.1	4.6	2.5
	Mean	1.7	1.4	1.5	1.3	1.9	1.6	1.5	1.6
Total	Percent	100	100	100	100	100	100	100	100
	Number	2387	1472	775	208	213	4286	769	5055

Annex Table 2.8
Makeup of household in terms of viewership by age and gender, Pakistan, 2009

(Percent)

Age	No. of persons viewing TV	Age group				Gender		Total
		< 20	20 - 39	40 - 59	60 +	Male	Female	
Upto 5 years of children	No person	59	44.2	54.5	58.7	46.4	58.5	48.2
	1 person	25.7	32.6	26.3	23.9	30.5	29.5	30.3
	2 persons	9	16.8	16.1	7.6	17.1	9.6	16
	3 persons	3.5	4.5	2	4.3	4.1	1.8	3.8
	4 persons	1	1.2	0.8	2.2	1.2	0.5	1.1
	5 persons and above	1.7	0.6	0.4	3.3	0.8	0.1	0.7
06 – 12 years of children	No person	39.2	45	34.8	62	42.2	41.8	42.1
	1 person	37.2	27.1	30.6	18.5	27	37	28.5
	2 persons	19.8	21.6	25.6	17.4	23.4	17.3	22.5
	3 persons	2.1	4.7	7.4	1.1	5.5	3.5	5.2
	4 persons	1	1.3	1.2	1.1	1.4	0.3	1.3
	5 persons and above	0.7	0.3	0.4	-	0.3	0.1	0.3
13 - 18 years of persons	No person	12.5	44.9	29.6	29.3	39.1	35.4	38.6
	1 person	38.5	26.6	29	31.5	27.1	33.6	28.1
	2 persons	36.1	18.8	28.4	20.7	22.5	22.1	22.5
	3 persons	9.7	6.9	8.3	12	7.6	6.9	7.5
	4 persons	2.1	1.8	2.4	4.3	2.1	1.6	2
	5 persons and above	1	1	2.4	2.2	1.6	0.4	1.4
19 - 35 years of persons	No person	19.8	10.4	30.3	9.8	17.2	12.7	16.5
	1 person	27.4	23.1	26.6	14.1	22.7	31.8	24.1
	2 persons	34.7	42.3	24.6	33.7	36.6	37.7	36.8
	3 persons	9.7	12.5	10.5	18.5	12.2	10.1	11.9
	4 persons	4.2	5.8	3.6	13	5.5	3.9	5.3
	5 persons and above	4.2	5.9	4.2	10.9	5.7	3.7	5.4
36 years and above	No person	15.3	24.2	3.9	2.2	18.5	13	17.7
	1 person	19.8	22.4	15	17.4	19.9	21.1	20
	2 persons	53.1	41.8	63.7	60.9	47.6	56.2	48.9
	3 persons	8	7.2	10.3	9.8	8.6	6.2	8.2
	4 persons	1.7	2.3	3.8	2.2	2.7	2.8	2.7
	5 persons and above	2.1	2.1	3.2	7.6	2.8	0.8	2.5
Total	Percent	100	100	100	100	100	100	100
	Number	288	3257	1404	92	4292	763	5055

Annex Table 2.9
Number of earning members in a household by Region, Pakistan, 2009

(Percent)

Earning Member	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
						Urban	Rural	
1	49.9	65.4	61	51.4	50.2	56	57.2	56.2
2	34.2	25.4	24.6	27.9	40.4	30.3	29.3	30.2
3 to 5	15.2	9	13.5	20.7	9.4	13.1	12.9	13.1
6 and above	0.7	0.2	0.8			0.5	0.7	0.5

Annex Table 2.10
Number of earning members by age and gender, Pakistan, 2009

(Percent)

Member	Age group				Gender		Total
	< 20	20 - 39	40 - 59	60 +	Male	Female	
1	52.4	55.6	59.7	37	56.6	53.9	56.2
2	31.6	30.3	29.3	34.8	29.9	31.7	30.2
3 to 5	16	13.6	10.7	23.9	13	13.8	13.1
6 and above	-	0.5	0.3	4.3	0.5	0.7	0.5

Annex Table 2.11
Family income of household head by Region, Pakistan, 2009

(Percent)

Family Income		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
							Urban	Rural	
Upto Rs.5000		4.1	3.7	1.7	1	6.6	3.1	6.2	3.6
Rs.5001 - 10000		21.4	26.7	27.7	42.3	23	23.2	34.1	24.8
Rs.10001 - .20000		32.3	35.9	41.8	37.5	50.2	36	34.6	35.8
Rs.20001 - 50000		30.8	24.1	22.1	17.8	9.4	27.2	19.8	26.1
Rs.50001 - 75000		4.7	4.1	0.6	1	-	4.1	0.8	3.6
Rs.75001 and above		6.7	5.4	6.1	0.5	10.8	6.4	4.6	6.1
Total	Percent	100	100	100	100	100	100	100	100
	Number	2387	1472	775	208	213	4286	769	5055

Annex Table 2.12
Family income of household head by age and gender, Pakistan, 2009

(Percent)

Family income		Age group				Gender		Total
		< 20	20 - 39	40 - 59	60 +	Male	Female	
Upto Rs.5000		5.6	3.5	3.3	4.3	3.8	2.6	3.6
Rs.5001 - 10000		25.3	26.6	21.2	14.1	26.1	17.4	24.8
Rs.10001 - 20000		32.3	36.9	34	37	36.7	30.7	35.8
Rs.20001-50000		30.6	23.7	30.5	31.5	25.4	30.1	26.1
Rs.50001 - 75000		1	3.4	4.6	4.3	2.9	7.5	3.6
Rs.75001 and above		5.2	5.9	6.4	8.7	5.1	11.7	6.1
Total	Percent	100	100	100	100	100	100	100
	Number	288	3257	1404	92	4292	763	5055

Annex Table 2.13
Household watching TV frequently by Region, Pakistan, 2009

(Percent)

	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
Watch TV frequently	77.6	90.1	44.5	95.2	58.2	76.6	73.2	76.1	3847

Annex Table 2.14
Household watching TV frequently by age and gender, Pakistan, 2009

(Percent)

	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Watch TV frequently	76	75.9	77.3	67.4	74.6	84.4	76.1	3847

Annex Table 2.15
Average number of TV set in the household, by Region, Pakistan, 2009

(Percent)

	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
						Urban	Rural	
Number of TV sets in the Household	1.3	1.2	1.1	1.2	1.1	1.3	1.1	1.2

Annex Table 2.16
Average Number of TV set in a household by age and gender, Pakistan, 2009

(Percent)

	Age group				Gender		Total
	< 20	20 - 39	40 - 59	60 +	Male	Female	
TV set	1.3	1.2	1.2	1.3	1.2	1.3	1.2

Annex Table 2.17
Average number of CTV channels in the household, by Region, Pakistan, 2009

(Percent)

	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
						Urban	Rural	
CTV channels	60.7	59.7	50.7	38.2	53	59.9	44.8	57.9

Annex Table 2.18
Average Number of CTV channels in a household by age and gender, Pakistan, 2009

(Percent)

	Age group				Gender		Total
	< 20	20 – 39	40 – 59	60 +	Male	Female	
CTV Channels	63.6	57	58.8	59.3	56.3	65.7	57.9

Annex Table 2.19
Average monthly fee of CTV connection, by Region, Pakistan, 2009

(Percent)

	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
						Urban	Rural	
Average monthly fee	226	198.1	269.5	222.8	204.4	222.1	207.9	220.3

Annex Table 2.20
Average monthly fees of CTV connection by age and gender, Pakistan, 2009

(Percent)

	Age group				Gender		Total
	< 20	20 – 39	40 - 59	60 +	Male	Female	
Monthly fee	235.3	220.6	217.2	203.8	211.2	264.3	220.3

Annex Table 2.21
Number, Brand and size of TV set in a household, by Residence and Region, Pakistan, 2009

(Percent)

		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Urban	Rural	Total	
									Percent	Number
Number of TV sets in the household	1	76.9	82.6	87.2	84.6	91.6	79.4	89.7	81	4024
	2	18.3	14.8	11.3	11.5	8.4	16.7	9	15.5	772
	3	3.8	2	1.3	2.9	-	3	0.9	2.7	135
	4	0.9	0.5	0.3	0.5	-	0.7	0.4	0.6	32
	5	0.1	0.1		0.5	-	0.1		0.1	5
Size of TV set	14 '	40.1	47.3	39.9	66.8	49.7	41.9	53.2	43.6	2168
	21 '	48.7	52.2	50.4	39.4	38.5	51.1	39	49.2	2446
	25 '	16.4	5.6	12.2	4.8	4.5	12.3	8.3	11.7	580
	29 '	8.1	4.7	6.6	0.5	-	7	2.4	6.3	311
	Others	3.7	2.3	3.4	0.5	13.4	3.3	4.6	3.5	172
Make of TV set	Local	35.3	51.3	18.4	20.2	5.6	37.2	27.1	35.6	1771
	Imported	60.6	45	82.9	83.2	95.5	60.8	66.7	61.7	3067
Manufacturer	LG	27.8	25.1	16.1	14.4	12.3	24.3	22.8	24	1194
	Toshiba	3.3	1.9	6.6	1.4	14	3.6	4.2	3.7	185
	Phillips	7.8	22.8	8.4	4.8	9.5	12.7	9.4	12.2	605
	Sharp	2.3	1.4	10.2	0.5	8.9	3.6	2.8	3.4	171
	National	8.3	10.4	10.1	8.7	9.5	9.1	9.9	9.2	459
	Sony	38.3	27.5	24.6	48.6	31.8	34	28.7	33.2	1650
	Sanyo	1.4	1.9	5.4	1	1.1	2.1	2.1	2.1	106
	Noble	7.5	10	4.1	6.3	4.5	7.2	9.1	7.5	374
	PC	0.8	1.2	1.2	1	2.2	1	1.1	1	52
	Onida	0.2	0.8	0.5	-		0.4	0.3	0.4	19
	Orion	0.6	0.5	1.7	-	1.1	0.6	1.1	0.7	35
	Singer	3.3	1.4	10.4	-	9.5	3.8	4.5	3.9	195
	Samsung	6.9	4.6	10.4	5.8	0.6	6.7	5.4	6.5	324
	Panasonic	9.2	4.9	34.6	20.2	2.2	12.2	11.5	12.1	602
	Others	5.9	1.3	29.3	0.5	1.1	8.1	6.2	7.8	387
Total	100	100	100	100	100	100	100	100	4968	

Annex Table 2.22
Number, brand, size and make of TV set in a household by age and gender, Pakistan, 2009

(Percent)

		Age group				Gender		Total	
		< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Number of TV sets in the household	1	79.9	81.4	80.4	76.5	81.6	77.4	81	4024
	2	15.5	15.2	16.2	21.2	14.8	19.7	15.5	772
	3	4.2	2.6	2.9	1.2	2.8	2.4	2.7	135
	4	0.4	0.7	0.5	1.2	0.7	0.4	0.6	32
	5	-	0.2	-	-	0.1	0.1	0.1	5
Size of TV set	14 '	41.3	44.4	42.4	47.1	47.2	23.6	43.6	2168
	21 '	43.1	49	51	49.4	48.3	54.3	49.2	2446
	25 '	16.6	11	12.4	10.6	9.3	24.8	11.7	580
	29 '	9.5	6.1	6.1	5.9	5	13.3	6.3	311
	Others	2.8	3.2	4.3	3.5	3.4	3.6	3.5	172
Make of TV set	Local	37.8	33.7	39.4	38.8	32.2	54.7	35.6	1771
	Imported	58.3	63.9	57.7	60	64.9	43.9	61.7	3067
Manufacturer	LG	26.1	24.5	23.1	16.5	23.8	25.4	24	1194
	Toshiba	2.5	4.1	3.3	1.2	3.8	3	3.7	185
	Phillips	8.8	12.3	12.9	8.2	12.5	10.4	12.2	605
	Sharp	1.8	3.7	3.3	2.4	3.7	2	3.4	171
	National	7.8	9.3	9.5	8.2	9.7	6.9	9.2	459
	Sony	40.3	32.8	31.9	48.2	31.4	43.1	33.2	1650
	Sanyo	1.4	2.1	2.5	1.2	2.3	1.2	2.1	106
	Noble	7.4	6.6	9.5	8.2	7.6	7.3	7.5	374
	PC	2.8	1	0.9	-	1	1.5	1	52
	Onida	-	0.4	0.5	-	0.3	0.8	0.4	19
	Orion	1.1	0.7	0.6	1.2	0.7	0.9	0.7	35
	Singer	1.1	4	4.1	7.1	4	3.7	3.9	195
	Samsung	4.6	6.7	6.2	8.2	6.6	6.1	6.5	324
	Panasonic	11	12.6	11.4	9.4	12.8	8.6	12.1	602
	Others	5.7	7.9	7.9	9.4	8.3	4.8	7.8	387
Total		100	100	100	100	100	100	100	4968

Annex Table 2.23
Type of CTV connection in a household by Residence and Region, Pakistan, 2009

(Percent)

CTV connections		Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Urban	Rural	Total	
									Percent	Number
Have CTV connection	No	15.2	6.3	45.9	-	22.3	14.8	29.2	17	843
	Yes	84.8	93.7	54.1	100	77.7	85.2	70.8	83	4125
Type of CTV connection	Coaxial	94.5	90.1	65.1	99.5	87.8	91.9	78.3	90.1	3715
	Optic fibre	2.6	2.4	17.1	-	-	4.3	0.6	3.8	157
	Wireless	1.4	0.7	0.2	-	-	0.9	1.5	0.9	39
	IP TV	0.1	0.1		-	-	0.1	0.2	0.1	4
	DTH	1.2	6.6	17.5	0.5	12.2	2.9	19.3	5	206
	Others	0.1			-	-	0	0.2	0	2

Annex Table 2.24
Type of CTV connection in a household by age and gender, Pakistan, 2009

(Percent)

Type of CTV connection	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Coaxial	91.5	89.3	91.4	95.4	90.1	90.2	90.1	3715
Optic fibre	4	4.4	2.4	1.5	3.5	5.2	3.8	157
Wireless	0.8	1	0.8	1.5	0.8	1.7	0.9	39
IP TV	-	0.1	0.1	-	0.1	0.1	0.1	4
DTH	3.2	5.1	5.3	1.5	5.5	2.6	5	206
Others	0.4	-	0.1	-	0	0.1	0	2

Annex Table 2.25
Number of CTV channels in a household by Residence and Region, Pakistan, 2009

(Percent)

CTV Channel	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Urban	Rural	Total	
								Percent	Number
Less than 50	27.7	30.4	45.2	65.9	28.1	28.9	55.3	32.3	1332
50 - 75	45.1	42.3	39.2	32.7	67.6	44.8	36.4	43.7	1802
76 and above	22.7	19.7	15.6	1.4	1.4	21.2	6	19.2	792
Don't know	0.9	0.5	-	-	-	0.7	0.2	0.6	25
No response	3.6	7.1	-	-	2.9	4.5	2.1	4.2	173

Annex Table 2.26
Number of channels available on CTV connection by age and gender, Pakistan, 2009

(Percent)

Number of channels		Age group				Gender		Total	
		< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
CTV channels	< 50	25.1	34.1	30.1	26.2	36	14.5	32.3	1332
	50 - 75	42.9	42.7	45.9	49.2	41.7	53.3	43.7	1802
	76 +	26.3	18.6	18.9	21.5	17.7	26.7	19.2	792
	DK	0.8	0.5	0.8	-	0.4	1.8	0.6	25
	No response	4.9	4.1	4.3	3.1	4.3	3.7	4.2	173

Annex Table 2.27
Monthly fee of CTV connection in a household by Residence and Region, Pakistan, 2009

(Percent)

Monthly Fee		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Urban	Rural	Total	
									Percent	Number
Monthly fee of CTV channels	Upto Rs. 200	63.8	76.2	41.9	67.3	64	64.2	76.6	65.8	2716
	Rs.201 – 500	34.6	23.6	51.2	32.7	36	34.6	18.9	32.6	1344
	Above than Rs.500	0.8		0.5	-	-	0.4	0.9	0.5	19
	No response	0.8	0.2	6.5	-	-	0.8	3.6	1.1	46
Total		100	100	100	100	100	100	100	100	4125

Annex Table 2.28
Monthly fee of CTV connection by age and gender, Pakistan, 2009

(Percent)

Monthly Fee	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Upto 200	56.7	67.5	63.6	73.8	70.5	43.1	65.8	2716
201 - 500	41.7	30.5	35.6	26.2	28	54.6	32.6	1344
500 +	0.4	0.6	0.3	-	0.6		0.5	19
No response	1.2	1.4	0.5	-	0.9	2.3	1.1	46
Total	100	100	100	100	100	100	100	4125

Annex Table 2.29
Time of viewership in a household by Residence and Region, Pakistan, 2009

(Percent)

Viewership		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
							Urban	Rural	
Watched TV - Morning	No specific time	84.7	72.7	85.8	42.8	87.8	79	84.1	79.8
	Less than 1 hr	3	6.7	3.2	1	1.9	4.3	2.2	4
	1 - 2 hrs	11.4	19	10.3	47.1	9.9	15.2	12.7	14.9
	3 to 5 hrs	0.8	1.4	0.5	9.1	0.5	1.4	0.8	1.3
	6 hrs and above	0.1	0.3	0.1			0.1	0.1	0.1
Watched TV- Afternoon	No specific time	92	79.6	95.2	83.2	95.3	87.8	93.1	88.6
	Less than 1 hr	0.5	1	1	1		0.7	0.7	0.7
	1 - 2 hrs	6.7	15.1	3.5	15.9	4.7	9.6	5.3	9
	3 to 5 hrs	0.8	4.3	0.3			1.8	0.9	1.7
Watched TV - Evening	No specific time	76.7	67.4	84.8	61.5	91.1	74.5	79.2	75.2
	Less than 1 hr	0.8	1.1	1.7		0.5	1	1.2	1
	1 - 2 hrs	19.8	23.2	10.5	32.2	6.6	19.9	16	19.3
	3 to 5 hrs	2.5	7.9	2.8	6.3	1.9	4.4	3.6	4.3
	6 hrs and above	0.1	0.3	0.3			0.2		0.2
Watched TV - At night	No specific time	52.7	37.2	75.4	43.3	80.8	51.9	55.7	52.5
	Less than 1 hr	0.8	1.7		-	0.5	0.9	0.9	0.9
	1 - 2 hrs	30.6	32.1	18.3	43.8	11.3	28.8	29.4	28.9
	3 to 5 hrs	15.5	26	5.7	13	7.5	17.5	12	16.6
	6 hrs and above	0.2	3.1	0.6	-	-	0.9	2.1	1.1
	No response	0.2	-	-	-	-	0.1	-	0.1
Total	Percent	100	100	100	100	100	100	100	100
	Number	2387	1472	775	208	213	4286	769	5055

Annex Table 2.30
Time of viewership in a household by age and gender, Pakistan, 2009

(Percent)

Viewership		Age group				Gender		Total
		< 20	20 - 39	40 - 59	60 +	Male	Female	
Watched TV - Morning	No specific time	83	79.2	80.1	80.4	80.7	74.6	79.8
	Less than 1 hr	2.1	3.8	4.8	2.2	3.8	5.1	4
	1 to 2 hrs	13.2	15.3	14.2	17.4	14.2	18.3	14.9
	3 to 5 hrs	0.7	1.6	0.7	-	1.2	1.7	1.3
	06 hrs and above	1	0.1	0.1	-	0.1	0.3	0.1
Watched TV - Afternoon	No specific time	87.8	88.2	89.4	94.6	90.8	76.7	88.6
	Less than 1 hr	0.3	0.8	0.6	1.1	0.7	0.9	0.7
	1 to 2 hrs	10.8	9.1	8.5	3.3	6.9	20.3	9
	3 to 5 hrs	1	1.8	1.5	1.1	1.6	2.1	1.7
Watched TV - Evening	No specific time	72.2	74.8	76.4	84.8	77.5	62.4	75.2
	Less than 1 hr	1	0.9	1.3	1.1	1.1	0.5	1
	1 - 2 hrs	21.9	19.7	18.3	9.8	17.1	31.5	19.3
	3 to 5 hrs	4.9	4.4	4	4.3	4.1	5.2	4.3
	6 hrs and above		0.3	0.1	-	0.2	0.4	0.2
Watched TV - At night	No specific time	51.7	52.6	51.9	59.8	54.3	41.9	52.5
	Less than 1 hr	0.7	0.5	1.7	-	0.9	0.5	0.9
	1 to 2 hrs	27.1	27.9	31.1	33.7	27.9	34.2	28.9
	3 to 5 hrs	16.3	18	14.3	5.4	15.7	21.8	16.6
	6 hrs and above	3.8	0.9	0.9	1.1	1	1.6	1.1
	No response	0.3	0.1	0.1	-	0.1	-	0.1
Total	Percent	100	100	100	100	100	100	100
	Number	288	3257	1404	92	4292	763	5055

Annex Table 2.31
Type of TV channels usually watched by Residence and Region, Pakistan, 2009

(Percent)

Type of channel	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
News	71.8	79.3	71.1	88.5	45.5	73.5	73	73.5	3713
Music	36.7	38.9	24.5	47.6	16	35.1	34.5	35	1771
Drama	46.8	53.4	43.9	47.1	9.4	47.2	44.2	46.7	2362
Movie	32.7	37	32.4	42.3	7.5	33.4	32.2	33.2	1679
Sports	34	26.1	31	26.4	16.9	30.2	29.9	30.2	1526
Current affairs	15.6	9.3	37.4	12	24.9	17	19.6	17.4	878
Mixed programmes	17.9	13.8	23.5	6.7	7	15.7	22	16.6	841
Animal	4.5	3.3	7.1	4.3	16.9	4.5	8.3	5.1	256
History	5.7	5.3	8.6	17.8	8	6.3	8.6	6.6	336
Geographic	18.4	12.2	15.4	21.6	0.9	16.2	11.6	15.5	785
Religious	22.5	17.7	29.4	15.9	16	21.1	24.8	21.6	1094
Education	5.9	4.4	8.5	7.7	6.1	5.9	5.9	5.9	300
Cartoon	8.8	7.8	6.5	1	5.2	7.7	7.2	7.7	387
Children programmes	4.9	2.1	2.8	2.4	0.9	3.4	4	3.5	177
Cooking Programmes	4.9	7.3	5	1.4	5.2	5.6	4.7	5.5	278
Scientific programmes	4.6	4	3.7	1.9	2.3	4	4.8	4.1	207
Political programmes	5.4	8.1	11.1	8.2	7.5	6.8	10	7.3	367
Parliament coverage	2.9	2.4	2.7		3.3	2.4	3.9	2.6	132
Agricultural programmes	2.4	2.2	2.5	1.4	1.4	2.1	3.3	2.3	116
Judiciary channels	2.9	2.2	2.5	0.5	1.9	2.4	2.9	2.5	126
English language	4.7	4.5	2.5	2.4	4.7	4.2	4.2	4.2	211
Persian language	2.3	1.6	1.4		0.9	1.7	2.6	1.8	91
Arabic language	2.3	1.6	1.4		0.5	1.7	2.7	1.8	92
Others	2.3	1.7	1.2		0.9	1.7	2.6	1.8	92

Annex Table 2.32
Type of TV channels usually watched by age and gender, Pakistan, 2009

(Percent)

Type of channel	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
News	62.8	71.7	79.8	71.7	74.4	67.9	73.5	3713
Music	33	37.2	31.6	19.6	32.4	49.8	35	1771
Drama	48.3	47.6	45.6	29.3	42.2	72	46.7	2362
Movie	35.4	36.1	27.2	15.2	32.9	34.7	33.2	1679
Sports	38.5	30.8	27.3	30.4	31.8	21	30.2	1526
Current affairs	16.3	16.1	20.2	25	17.9	14.3	17.4	878
Mixed programmes	21.5	16.5	15.5	21.7	16.4	18.2	16.6	841
Animal	4.5	5.4	4.2	8.7	5.1	4.6	5.1	256
History	4.5	6.6	6.9	10.9	6.8	5.9	6.6	336
Geographic	18.1	16.3	13.4	14.1	15.7	14.7	15.5	785
Religious	18.1	19.5	26.9	29.3	21.3	23.6	21.6	1094
Education	6.3	6.3	4.8	10.9	5.6	7.6	5.9	300
Cartoon	10.8	7.6	7.3	7.6	6.5	14.4	7.7	387
Children programmes	4.2	3.6	2.8	7.6	2.9	6.7	3.5	177
Cooking Programmes	5.2	5.3	5.9	7.6	4.2	12.8	5.5	278
Scientific programmes	5.2	4.4	3	7.6	4	4.8	4.1	207
Political programmes	7.3	6.6	8.3	16.3	7.5	6	7.3	367
Parliament coverage	2.4	2.5	2.6	5.4	2.5	3.3	2.6	132
Agricultural programmes	2.4	2.3	2.1	4.3	2.1	3.3	2.3	116
Judiciary channels	3.1	2.5	2.3	4.3	2.4	3.1	2.5	126
English language	4.9	4.7	2.6	5.4	4.1	4.7	4.2	211
Persian language	2.8	1.9	1.3	4.3	1.6	3.1	1.8	91
Arabic language	2.4	1.9	1.2	5.4	1.6	3.3	1.8	92
Others	2.4	2	1.2	4.3	1.6	3.3	1.8	92

Annex Table 2.33
Household indicated favourite TV channels they watched by Residence and Region, Pakistan, 2009

(Percent)

Programme	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
News	39.4	57.7	51.9	67.8	22.1	47.4	45.5	47.1	2381
Music	24	27.9	24.4	24	9.9	24.1	27.4	24.6	1243
Drama	28.2	37.5	29.4	14.4	6.6	30.7	23.9	29.6	1498
Movie	22	28.5	29.9	19.2	5.6	24.5	23.1	24.3	1227
Sports	23.5	19.2	29.2	13.9	16	22.3	23.4	22.4	1134
Current affairs	10.8	6.7	28.9	9.6	29.6	12.6	16.1	13.1	663
Mixed programmes	13.4	9.5	26.5	4.3	8.5	12.9	17.9	13.7	691
Animal	4.4	1.9	21.8	2.9	13.1	6.2	9.2	6.7	337
History	4.4	3.6	23.7	10.6	0.9	6.7	10.3	7.2	365
Geographic	16.4	14.9	27.7	19.7	3.3	17.2	17.4	17.3	873
Religious	18.4	17.5	35.7	19.7	22.5	20.4	24.3	21	1062
Education	5.3	4.6	24.8	3.4	2.8	7.6	9.8	7.9	399
Cartoon	5.9	6.1	23.7	1	0.9	8	9.6	8.3	418
Children programmes	4.1	1.2	22.2	2.4	1.9	5.5	7.8	5.9	297
Cooking Programmes	4.8	4.8	19.9		4.2	6.7	7.9	6.9	347
Scientific programmes	5.2	10.7	23.1	7.7	1.4	9.4	9.9	9.5	479
Political programmes	5.3	3.6	23.6	6.7	6.1	7.3	10	7.7	389
Parliament coverage	3	1	23	0.5	1.4	5	7.3	5.3	269
Agricultural programmes	2.8	1.4	21.7	0.5	0.5	4.7	7.2	5.1	256
Judiciary channels	3.4	1.2	23.7	0.5	0.5	5.4	6.8	5.6	283
English language	5.4	12.7	19.2	4.8	1.4	9.7	7.9	9.5	478
Persian language	2.5	0.9	18.3		1.4	4.1	5.6	4.3	217
Arabic language	2.6	0.6	18.5		0.5	4	5.6	4.3	216
Others	2.5	0.7	18.7		0.9	4	5.6	4.3	216

Annex Table 2.34
Household indicated favourite TV channels they watched by age and gender, Pakistan, 2009

(Percent)

Programme	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
News	33.7	45.7	52.5	53.3	49.4	34.1	47.1	2381
Music	24	25.8	22.7	12	23.2	32.5	24.6	1243
Drama	30.2	29.6	30	19.6	25.5	53.1	29.6	1498
Movie	27.1	25.5	21.3	15.2	24.9	21	24.3	1227
Sports	28.8	22.8	20.7	16.3	24.2	12.3	22.4	1134
Current affairs	7.6	12.2	16.1	16.3	13.8	9.2	13.1	663
Mixed programmes	14.6	13.6	14	8.7	13.9	12.2	13.7	691
Animal	4.2	6.5	7.6	4.3	7.2	3.7	6.7	337
History	4.5	6.7	9.1	3.3	7.9	3.7	7.2	365
Geographic	18.8	17.5	16.6	12	18.1	12.6	17.3	873
Religious	19.1	19.3	24.9	27.2	21.2	19.7	21	1062
Education	6.3	7.6	9	4.3	8.3	5.6	7.9	399
Cartoon	8	8.3	8.7	2.2	8	9.7	8.3	418
Children programmes	3.5	5.7	6.8	2.2	6.2	4.3	5.9	297
Cooking Programmes	4.2	6.2	9	3.3	5.8	13	6.9	347
Scientific programmes	6.9	9.5	10.5	2.2	9.5	9.2	9.5	479
Political programmes	4.2	7.4	9	9.8	8.3	4.5	7.7	389
Parliament coverage	3.5	5.1	6.1	5.4	5.8	2.5	5.3	269
Agricultural programmes	2.4	4.9	6.2	1.1	5.5	2.5	5.1	256
Judiciary channels	2.8	5.3	6.8	3.3	6.1	2.8	5.6	283
English language	5.6	9.6	10.1	4.3	9.4	9.8	9.5	478
Persian language	2.1	4.1	5.2	2.2	4.6	2.5	4.3	217
Arabic language	2.1	4.3	4.8	1.1	4.6	2.5	4.3	216
Others	2.1	4.1	5	3.3	4.6	2.6	4.3	216

Annex Table 2.35
Household like to have more and want to watch more TV channels in different languages by Residence and Region, Pakistan, 2009

(Percent)

Item	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
Would like more TV channels be available	55.7	65	63.5	82.7	54.9	58.5	72.8	60.7	3067
Like to see more Pakistani channels	61.5	74	47.5	76.4	59.2	62.2	70.5	63.5	3209
Watch TV in regional languages	50.9	70.3	44.4	86.5	40.8	55.5	62.8	56.6	2862
Like to add more foreign language channels in CTV	34.1	38	71.5	48.6	39	40.2	50.2	41.8	2111

Annex Table 2.36
Household like to watch TV channels in regional languages by age and gender, Pakistan, 2009

(Percent)

	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Would like more TV channels be available	54.9	62.7	57.6	54.3	64.1	41.4	60.7	3067
Like to see more Pakistani channels	57.6	64.3	63.1	58.7	65.7	51.1	63.5	3209
Watch TV in regional language	47.2	57	57.8	55.4	60	37.4	56.6	2862
Like to add more foreign language channels in CTV	46.2	43.8	36.5	39.1	44.6	25.6	41.8	2111

Annex Table 2.37
Household desire to add more TV channels by Residence and Region, Pakistan, 2009

(Percent)

Programme	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Residence		Total	
						Urban	Rural	Percent	Number
News	27.9	41.1	44.5	37.2	17.1	36.1	29.1	34.8	1067
Music	21.9	29.8	40.4	22.1	7.7	26.4	28.8	26.8	822
Drama	24.4	33.5	42.1	11	9.4	29.6	25.2	28.8	882
Movie	21.7	28.1	42.5	16.3	4.3	26	26.3	26.1	800
Sports	21.3	21	42.5	11.6	16.2	23.4	26.1	23.9	732
Current affairs	9.6	9.2	45.1	11	31.6	15.1	20.4	16.1	493
Mixed programmes	11.7	11.3	43.3	12.8	15.4	15.9	21.3	16.9	517
Animal	6	2	39.6	7.6	18.8	10.2	13.2	10.7	329
History	5.7	7.4	40.9	18.6	9.4	12.1	15.7	12.7	391
Geographic	17.5	13	43.3	19.2	10.3	19.9	20.5	20	614
Religious	25.6	26.5	51.6	27.9	40.2	28.4	41.3	30.7	943
Education	12.3	10.6	47	11.6	19.7	17.1	19.8	17.6	539
Cartoon	5.9	4.9	44.3	1.2	6.8	11	13.8	11.5	354
Children programmes	5.2	4.9	44.5	6.4	12	11.4	13.2	11.7	360
Cooking Programmes	5.2	3	40.9	0.6	6.8	10	10.4	10	308
Scientific programmes	12.3	13.8	47	7	7.7	17.5	19.5	17.8	547
Political programmes	5.3	6.8	46.7	15.7	12	12.8	15.5	13.3	407
Parliament coverage	3.7	0.7	43.3	1.7	5.1	8.7	10.7	9.1	278
Agricultural programmes	3.5	1.4	40.4	4.1	1.7	8.2	11.1	8.7	268
Judiciary channels	5.6	0.8	47.8	2.3	3.4	10.4	11.6	10.6	325
English language	9.1	21.5	47	20.3	3.4	18.8	22.5	19.5	597
Persian language	2	2.1	36	-	2.6	7.2	8.2	7.4	227
Arabic language	2.2	0.9	35.6	-	4.3	6.9	8	7.1	218
Others	2.3	1.3	35	-	3.4	6.9	7.9	7.1	218

Annex Table 2.38
Existing number of TV channels are too many by Residence and Region, Pakistan, 2009

(Percent)

Number of Channel		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total
							Urban	Rural	
No		33.1	19.6	48.4	22.2	44.8	32.1	32.5	32.1
Yes		66.9	80.4	51.6	77.8	55.2	67.9	67.5	67.9
Total	Percent	100	100	100	100	100	100	100	100
	Number	1058	515	283	36	96	1779	209	1988

Annex Table 2.39
Household desire to add more TV channels by age and gender, Pakistan, 2009

(Percent)

Additional Channel desire	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
News	24.1	34	38.1	48	36.4	20.9	34.8	1067
Music	22.8	28.1	24.8	20	26.6	28.8	26.8	822
Drama	24.1	27.8	32	32	26.8	46.2	28.8	882
Movie	27.8	26.8	23.6	28	26.3	24.1	26.1	800
Sports	26.6	24.3	22.6	20	25.7	8.2	23.9	732
Current affairs	8.9	16.5	16.6	12	17	8.2	16.1	493
Mixed programmes	18.4	16.8	16.9	14	17	15.5	16.9	517
Animal	7.6	10.9	11	8	11.3	5.7	10.7	329
History	8.9	12.8	13.6	8	13.5	6.3	12.7	391
Geographic	15.2	21	19.2	8	21.2	9.8	20	614
Religious	29.7	30.1	32.3	34	31.6	23.7	30.7	943
Education	19.6	17.3	18.5	8	18	13.9	17.6	539
Cartoon	11.4	11.8	11.2	8	11.9	8.5	11.5	354
Children programmes	7.6	11.7	13	6	12	9.5	11.7	360
Cooking Programmes	4.4	10.2	10.9	6	9.6	13.6	10	308
Scientific programmes	12.7	18	18.7	14	18.2	14.2	17.8	547
Political programmes	8.9	13.2	14.2	14	14.2	4.7	13.3	407
Parliament coverage	5.7	8.3	11.7	8	9.7	3.8	9.1	278
Agricultural programmes	6.3	8.5	9.9	8	9.3	3.5	8.7	268
Judiciary channels	9.5	10.3	11.7	4	11.3	4.7	10.6	325
English language	11.4	20.9	17.8	14	19.8	16.1	19.5	597
Persian language	3.8	7.7	7.5	2	7.9	2.8	7.4	227
Arabic language	4.4	7.4	7	2	7.5	3.5	7.1	218
Others	5.1	7.3	7.4	2	7.5	3.5	7.1	218

Annex Table 2.40
Household watched TV channels in regional languages by Residence and Region, Pakistan, 2009

(Percent)

Watch	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Residence		Total	
						Urban	Rural	Percent	Number
Punjabi	62.9	18.9	36	14.4	83.9	42.3	36.9	41.4	1184
Sindhi	2.5	87.7	2.6	28.3		34.6	36.4	34.9	999
Balochi	1.1	10	1.7	61.7	1.1	6.6	16.4	8.2	235
Sariaki	42.7	10	10.8	4.4	36.8	23.9	27.3	24.5	700
Pashto	2.9	4.2	92.2	35.6	1.1	16.1	15.9	16.1	460
Hindko	1.5	1.8	19.2	0.6	2.3	4	2.5	3.7	106
Potohari	6.8	0.4	1.7	-	44.8	4.2	6.8	4.6	132

Annex Table 2.41
Household watched TV channels in regional languages by age and gender, Pakistan, 2009

(Percent)

Watch	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Punjabi	51.5	39.1	44.2	47.1	39.1	62.1	41.4	1184
Sindhi	27.9	35.6	35.2	27.5	35.9	25.6	34.9	999
Balochi	2.2	9	7.6	5.9	8.4	6.3	8.2	235
Sariaki	19.1	23.3	27.6	31.4	25.4	16.1	24.5	700
Pashto	10.3	16.7	15.9	11.8	16	16.8	16.1	460
Hindko	0.7	3.5	4.6	5.9	3.6	4.9	3.7	106
Potohari	4.4	4.4	4.8	9.8	4.1	9.1	4.6	132

Annex Table 2.42
Household like more regional language TV channels by Residence and Region, Pakistan, 2009

(Percent)

Like	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
Punjabi	39.3	13.4	14.3	9.1	29.6	25.8	28.9	26.3	1329
Sindhi	2.4	63.2	10.5	25.5	-	21.7	24.8	22.2	1122
Balochi	1.6	8.3	17.9	51.9	-	7	13.9	8	406
Sariaki	24.1	8.2	10.8	4.3	11.3	15.6	18.7	16.1	813
Pashto	1.8	4.5	27.9	29.8	0.5	8	6.1	7.7	388
Hindko	1.8	2	24.3	-	0.9	5	6.6	5.2	264
Potohari	6.3	0.7	-	-	22.1	3.6	6.9	4.1	209

Annex Table 2.43
Household like more regional languages TV channels by age and gender, Pakistan, 2009

(Percent)

Regional Language	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Punjabi	30.9	25.2	27.4	31.5	26.8	23.6	26.3	1329
Sindhi	13.2	23	22.7	18.5	24.3	10.5	22.2	1122
Balochi	3.1	8.9	7.4	3.3	8.9	3.1	8	406
Sariaki	10.8	15.5	18.2	21.7	17.8	6.7	16.1	813
Pashto	4.2	7.4	9.1	7.6	8.3	4.1	7.7	388
Hindko	2.1	5.7	4.9	4.3	5.7	2.4	5.2	264
Potohari	5.6	3.6	4.8	7.6	4.1	4.1	4.1	209

Annex Table 2.44
Household indicated usefulness of Pakistani TV channels by Residence and Region, Pakistan, 2009

(Percent)

Usefulness	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
General knowledge	84.2	70.9	84.4	87.5	69.5	79.8	80	79.9	4037
News/current affairs	90	85.7	75.2	93.8	71.8	85.9	86	85.9	4342
Sports	78.5	63.3	78.3	46.6	65.3	72.6	70	72.2	3648
Food/cooking	58.3	39.6	57.9	23.6	64.3	52.3	47.7	51.6	2609
Entertainment	79.2	65.1	65.5	35.1	69	70.9	70.1	70.7	3576
Education	50.6	48.2	59.9	60.6	54.9	51.6	53.4	51.9	2624
Travel	44.2	23.8	56.9	13.9	43.2	38.2	42.9	39	1969
Business	40.6	33.1	20.6	12	47.9	35	31.5	34.5	1742
Religion	75.2	62.6	90.7	55.3	52.6	72.6	70	72.2	3648
Others	1.9	3.9	26.7	0.5		6	6.6	6.1	310

Annex Table 2.45
Household indicated usefulness of Pakistani TV channels by age and gender, Pakistan, 2009

(Percent)

Usefulness	Age group				Gender		Total	
	< 20	20 – 39	40 – 59	60 +	Male	Female	Percent	Number
General knowledge	83.3	79.9	79.6	72.8	78.7	86.6	79.9	4037
News/current affairs	87.8	85.1	87.8	80.4	84.9	91.2	85.9	4342
Sports	77.4	72.3	71.7	59.8	71	78.5	72.2	3648
Food/cooking	55.2	50.7	53.7	44.6	46.9	78.1	51.6	2609
Entertainment	72.2	70	72.6	66.3	68.6	82.8	70.7	3576
Education	55.9	53	48.8	47.8	53	45.9	51.9	2624
Travel	41.7	37.9	41	35.9	37.7	46.1	39	1969
Business	40.3	33	36.8	33.7	33.2	41.3	34.5	1742
Religion	73.6	72.6	70.8	73.9	72.4	70.8	72.2	3648
Others	3.1	6.1	6.8	6.5	6.9	1.7	6.1	310

Annex Table 2.46
Household indicated usefulness of Pakistani TV channels by Education level and gender, Pakistan, 2009

(Percent)

Usefulness	Education level					Gender		Total	
	No education	Under matric	Matric/ intermediate	Graduate	Master and above	Male	Female	Percent	Number
General knowledge	70.8	79.6	80.9	81.9	78.6	78.7	86.6	79.9	4037
News/ current affairs	78.3	88.6	85.7	86.9	84.9	84.9	91.2	85.9	4342
Sports	61.2	71.6	74	73.8	71	71	78.5	72.2	3648
Food/ cooking	48.6	49	52	53.4	52.2	46.9	78.1	51.6	2609
Entertainment	65.4	71.4	71.6	71	70.3	68.6	82.8	70.7	3576
Education	45.5	50.9	52.5	53	53.5	53	45.9	51.9	2624
Travel	34.1	37.4	40.3	40.1	38.2	37.7	46.1	39	1969
Business	38.5	36.2	34.9	31.8	33.9	33.2	41.3	34.5	1742
Religion	61.8	72.2	73.9	72.6	72.9	72.4	70.8	72.2	3648
Others	2.1	3.3	6.3	7.2	10	6.9	1.7	6.1	310

Annex Table 2.47
Availability and language of local/community TV channels by Residence and Region, Pakistan, 2009

(Percent)

Availability and Language		Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
							Urban	Rural	Percent	Number
Availability of Local/community TV channels to focus on local problems and issues		80.9	89.9	63.5	90.9	66.7	80.5	81.9	80.7	4079
Language	Urdu	53.7	60.4	46.5	16.9	55.6	54.9	45.1	53.4	2177
	Local/regional language	38.1	47.4	55.1	72	78.2	43.9	58.3	46.1	1882
	English	4.9	5.1	19.9	0.5	12.7	6.8	7	6.8	279
	Mixed language	23.4	25.5	29.7	22.8	37.3	25.1	26.7	25.3	1033
Availability through	CTV	66.1	70.8	71.5	62.4	22.5	68	59	66.6	2718
	Terrestrial antenna	67.1	41.5	45.3	37	81.7	53.2	66.7	55.3	2255

Annex Table 2.48
Household suggest language of local/community TV channels by age and gender, Pakistan, 2009

(Percent)

Suggestion		Age group				Gender		Total	
		< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Local/ community TV channels to focus on local problems and issues		78.5	81	80.9	73.9	80.7	80.5	80.7	4079
Language	Urdu	58	53.9	51.1	52.9	53.7	51.6	53.4	2177
	Local/ regional language	43.4	46.4	46	47.1	49.1	29.3	46.1	1882
	English	9.3	6.9	6.6	-	7.2	5	6.8	279
	Mixed language	18.6	24.6	28	30.9	24.4	30.3	25.3	1033
Availability through	CTV	65.9	66.3	68	61.8	67.8	60.1	66.6	2718
	Terrestrial antenna	58.8	55.4	54	58.8	56	51.3	55.3	2255

Annex Table 2.49
Household comments about advertisements on TV channels by Residence and Region, Pakistan, 2009

(Percent)

Comments	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Residence		Total	
						Urban	Rural	Percent	Number
Watch advertisement on TV	77.7	70.4	51.1	56.7	72.3	70.4	70.6	70.4	3559
Satisfied with quality / standard of advertisement	52.9	63.5	47.7	39.8	39.6	54.5	53.4	54.4	1935
Lack of objectivity	21.8	11.1	21.7	18.6	7.1	18	17.5	17.9	638
Vulgarity	20.3	10	14.9	21.2	23.4	17.3	14.5	16.9	600
Indecency	15	7.1	14.4	27.1	13	12.9	13.4	13	462
Excessive duration	24.2	15.6	11.6	35.6	46.8	21.9	20.4	21.7	771
Others	1.6	0.5	5.6	-	-	1.8	0.7	1.6	57

Annex Table 2.50
Household comments about advertisements watched on TV by age and gender, Pakistan, 2009

(Percent)

Comments on Advertisement	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Watch advertisement on TV	72.9	70.6	69.4	67.4	68.7	80.2	70.4	3559
Satisfied with quality/ standard of advertisement	53.8	55.8	51.6	48.4	56.4	44.8	54.4	1935
Lack of objectivity	22.9	16.4	20.6	14.5	15.2	30.9	17.9	638
Vulgarity	15.2	15.5	19.7	29	14.9	26.5	16.9	600
Indecency	9	12.3	15.5	12.9	11.2	21.6	13	462
Excessive duration	27.6	20.1	23.6	25.8	19.3	32.8	21.7	771
Others	0.5	1.5	2.2	1.6	1.6	1.5	1.6	57

Annex Table 2.51
Household listen FM Radio by Residence and Region, Pakistan, 2009

(Percent)

Radio Listening		Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Total
No		33.6	13.3	52.6	4.3	31.5	29.3
Yes		66.4	86.7	47.4	95.7	68.5	70.7
Total	Percent	100	100	100	100	100	100
	Number	2387	1472	775	208	213	5055

Annex Table 2.52
Household Listen Radio by age and gender, Pakistan, 2009

(Percent)

Radio Listening		Age group				Total
		< 20	20 - 39	40 - 59	60 +	
No		27.8	28.2	31.6	38	29.3
Yes		72.2	71.8	68.4	62	70.7
Total	Percent	100	100	100	100	100
	Number	288	3257	1404	92	5055

Annex Table 2.53
Time for listening FM Radio by Residence and Region, Pakistan, 2009

(Percent)

Time	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
Morning		21.8	25.3	15.1	13.7	17.4	17.6	17.4	622
Afternoon	8.6	8.2	19.9	1	12.3	9.2	10.2	9.3	334
Evening	16.7	21.2	25.1	8	17.8	18.5	20	18.7	669
Late night	37	30.6	52	42.2	37.7	36.6	36.4	36.6	1308
No specific time	46.8	38.7	25.9	49.2	45.2	41.8	41.8	41.8	1495

Annex Table 2.54
Time of listening FM Radio by age and gender, Pakistan, 2009

(Percent)

Time	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Morning	15.4	16.4	20.5	15.8	17.2	18.7	17.4	622
Afternoon	8.7	9.5	8.9	8.8	9.4	9	9.3	334
Evening	17.3	17.8	21.1	21.1	18.9	18	18.7	669
Late night	37.5	36.8	36.4	29.8	35.4	42.6	36.6	1308
No specific time	42.8	42.8	38.8	50.9	41.7	42.6	41.8	1495

Annex Table 2.55
Place where FM Radio listens by household by Residence and Region, Pakistan, 2009

(Percent)

Place	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Residence		Total	
						Urban	Rural	Percent	Number
House	76	73.7	88.8	87.4	78.8	77	78.8	77.2	2759
Office	4.4	3.8	1.6		4.1	3.8	2.6	3.7	131
Car	22.1	15.4	11.4	11.1	5.5	18.6	9.8	17.4	620
Business place	15.2	16	14.4	4	26.7	14.2	22	15.3	545
Others	7.6	5.3	10.4	6.5	4.1	6.8	7.4	6.9	246

Annex Table 2.56
Place where FM Radio listen by age and gender, Pakistan, 2009

(Percent)

Place	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
House	82.2	76.4	77.8	80.7	75.6	85.4	77.2	2759
Office	1.9	3.9	3.4	3.5	4	2.2	3.7	131
Car	12.5	16.8	20	12.3	16.5	21.7	17.4	620
Business place	13	16.4	12.9	19.3	17.4	4.4	15.3	545
Others	7.2	7.6	5.3	3.5	7.5	3.9	6.9	246

Annex Table 2.57
Number of Radio set in a household by Region, Pakistan, 2009

(Percent)

Radio Set	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Total
None	24	23.7	34.1	9	15.1	23.7
1	65.7	74.6	56.7	87.9	84.2	69.9
3	8	1	6.8	2	0.7	4.8
4 and above	2.3	0.7	2.5	1		1.6

Annex Table 2.58
Number of Radio set in a household by age and gender, Pakistan, 2009

(Percent)

Radio set	Age group				Total
	< 20	20 – 39	40 - 59	60 +	
None	20.2	23.2	26	14	23.7
1	68.3	70.4	68.5	82.5	69.9
3	6.7	4.7	4.5	3.5	4.8
4+	4.8	1.6	1	-	1.6

Annex Table 2.59
Language prefer to listen FM broadcast Programme by Region, Pakistan, 2009

(Percent)

Language		Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Total
Language prefer to listen FM broadcast Programme	English	2	2	8.6	-	4.9	2.6
	Urdu	95.2	84.5	89.6	97	93.1	90.8
	Others	2.9	13.5	1.8	3	2.1	6.6
Total	Percent	100	100	100	100	100	100
	Number	1575	1274	338	198	144	3529

Annex Table 2.60
Language prefer to listen FM broadcast Programme by age and gender, Pakistan, 2009

(Percent)

Language		Age group				Total
		< 20	20 - 39	40 - 59	60 +	
Language prefer to listen FM broadcast Programme	English	1	2.6	3.1	-	2.6
	Urdu	93.2	91.5	88.5	91.2	90.8
	Others	5.8	5.8	8.5	8.8	6.6
Total	Percent	100	100	100	100	100
	Number	206	2315	944	57	3529

Annex Table 2.61
Brand and type of Radio set in a household by Residence and Region, Pakistan, 2009

(Percent)

Brand and Type		Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Residence		Total	
							Urban	Rural	Percent	Number
Brand of Radio set	Local	44.7	62	40.9	33.2	37.7	50.3	45	49.5	1770
	Imported	52.4	26.1	60.2	65.8	64.4	43.7	53.2	45.1	1610
Type of Radio set	Desk type	25.8	27.4	29.4	62.3	39.7	28.8	32.4	29.3	1048
	Car	16.9	14.3	12.3	6	4.1	15.3	8.4	14.4	513
	Portable	20.5	18.9	45	8	28.8	22.3	20.6	22.1	789
	Tape recorder/ radio	42.5	27.1	62.1	26.6	32.9	36.3	46.2	37.7	1348
	Others	28.1	24.2	10.4	19.1	8.9	24.8	16.4	23.6	843

Annex Table 2.62
Brand and type of Radio set in a household by age and gender, Pakistan, 2009

(Percent)

Brand and Type		Age group				Gender		Total	
		< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Brand	Local	57.2	47.6	52.2	52.6	47.5	59.8	49.5	1770
	Imported	40.4	47.5	40.2	43.9	46.6	37	45.1	1610
Type	Desk type	28.8	27.5	33.4	36.8	29.6	28.2	29.3	1048
	Car	8.2	14.3	15.9	8.8	14	16.3	14.4	513
	Portable	17.8	23.5	19.5	22.8	24.3	11	22.1	789
	Tape recorder/ radio	42.3	37.8	36.9	33.3	36.4	44.7	37.7	1348
	Others	32.2	24.5	20.5	10.5	20.3	40.4	23.6	843

Annex Table 2.63
Programme mostly listened by Residence and Region, Pakistan, 2009

(Percent)

Programme	Punjab	Sindh	NWFP	Balochistan	AJK/FANA	Residence		Total	
						Urban	Rural	Percent	Number
Music	85.7	86.8	69.5	75.9	50.7	81.6	87.6	82.5	2947
Comedy	31.5	35.3	49.3	11.6	50.7	33.8	37.8	34.4	1228
Sports	34	35.3	39.2	16.6	45.9	33.7	39.6	34.5	1234
News/current affairs	56.1	59.3	70.6	84.4	74	60.8	62.8	61	2181
Weather	24.4	20	25.6	12.1	49.3	22.3	29	23.3	831
Social matters	20.4	13.2	36	2.5	41.1	19	21.2	19.3	690
Health related	16.4	16.5	30	18.6	42.5	18.4	23	19	680
Drama	7.6	7.7	33.5	2	35.6	9.7	20.2	11.1	398
Religious	34.3	38.8	72.8	27.1	45.9	39.4	42.8	39.9	1426
Others	2.1	3.6	10.6	1	2.7	3.3	4.6	3.5	124

Annex Table 2.64
Programmes mostly listen on Radio by age and gender, Pakistan, 2009

(Percent)

Programmes	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Music	90.4	83.2	80	64.9	81.2	89.1	82.5	2947
Comedy	38.9	35	31.7	35.1	35.1	30.9	34.4	1228
Sports	43.3	34.4	33.1	31.6	35.3	30.7	34.5	1234
News/ current affairs	52.9	60.5	63.1	75.4	62.8	52	61	2181
Weather	26.9	21.7	25.5	35.1	22.6	26.5	23.3	831
Social matters	16.3	19.1	19.5	33.3	19.5	18.3	19.3	690
Health related	20.7	17.3	21.3	45.6	18.9	19.9	19	680
Drama	16.3	10.7	11	12.3	11.9	7.3	11.1	398
Religious	40.9	38.6	41.3	66.7	40.8	35.3	39.9	1426
Others	2.4	3.2	3.9	10.5	3.5	3.6	3.5	124

Annex Table 2.65
Usefulness of FM Radio broadcast by Residence and Region, Pakistan, 2009

(Percent)

Usefulness	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
General knowledge	80	69.7	80.7	71.9	74	76.4	71.6	75.7	2705
News/current affairs	84.7	81.5	84.5	87.9	87.7	83.9	83.4	83.8	2995
Sports	63.5	53.3	63.5	17.1	56.8	56.6	59.4	57	2036
Food/ cooking	49	27.1	29.4	7.5	46.6	37	35.6	36.8	1314
Entertainment	80.1	70.2	61.9	23.6	65.8	71.1	70.4	71	2536
Education	41.7	39.2	52.9	32.7	50	40.6	49.2	41.8	1493
Travel	43.5	33.1	25.9	13.1	43.2	36.3	36.2	36.2	1295
Business	36	27.7	26.7	3	59.6	31.1	31.6	31.2	1114
Weather	63.1	39.3	54.5	24.1	84.9	52.3	53	52.4	1873
Religious	59.4	48	74.4	30.2	56.8	55.2	55	55.1	1970
Others	1.3	2.7	3.3	1.5		2	1.6	1.9	69

Annex Table 2.66
Usefulness of FM Radio Broadcast by age and gender, Pakistan, 2009

(Percent)

Usefullness	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
General knowledge	79.8	75.6	74.7	78.9	73.7	85.9	75.7	2705
News/ current affairs	86.5	82.8	85.4	89.5	82.8	88.8	83.8	2995
Sports	62.5	56.6	56.9	54.4	54.5	69.6	57	2036
Food/ cooking	38	34.2	42.6	38.6	31.1	65.7	36.8	1314
Entertainment	78.4	68.7	75.2	66.7	68.3	84.4	71	2536
Education	42.8	41.5	42	43.9	42.6	37.5	41.8	1493
Travel	35.1	34.7	40.1	40.4	33.8	48.4	36.2	1295
Business	26.4	29.2	36.8	31.6	30	37.2	31.2	1114

Annex Table 2.67
Comments on advertisements on FM Radio broadcast by Residence and Region, Pakistan, 2009

(Percent)

Advertisements	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
Listen to advertisements	77.6	69.7	46.3	30.2	86.3	68.8	72.4	69.3	2476
Objective	63.4	54.5	37.6	35	57.1	57.5	56.9	57.4	1422
Too loud /noisy	50.7	26.6	49.4	33.3	38.1	40.8	41.7	40.9	1013
Diverting interest from the main Programme	57.8	37.2	61.8	51.7	38.1	49.3	50.6	49.5	1226
Others	1.5	1	2.9		3.2	1.3	2.5	1.5	36

Annex Table 2.68
Listen advertisements of FM Radio by age and gender, Pakistan, 2009

(Percent)

Advertisements	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Listen to advertisements on FM radio Broadcast	72.1	68.2	70.2	82.5	68.3	74.5	69.3	2476
Objective	58	58	55.6	59.6	58	54.7	57.4	1422
Too loud/noisy	52	39.5	41.6	44.7	35.7	64.9	40.9	1013
Diverting interest from the main Programme	64.7	48.3	48.4	53.2	47.6	58.3	49.5	1226
Others	2.7	1.3	1.8		1.5	1.4	1.5	36

Annex Table 2.69
Comments on Satisfaction with quality of conversation of DJ (Disk Jockey) by Residence and Region, Pakistan, 2009

(Percent)

Quality	Punjab	Sindh	NWFP	Balochistan	AJK/ FANA	Residence		Total	
						Urban	Rural	Percent	Number
Satisfied with quality of conversation of DJ	53.5	76	33	88	49.3	58.9	54	58.2	2941
Decent	53	70.4	32.8	85.1	50.2	57.4	49.3	56.2	2841
Vulgar	10.6	8.5	8.4	7.7	20.7	10.3	8.2	10	503

Annex Table 2.70
Comments about DJ by age and gender, Pakistan, 2009

(Percent)

DJ	Age group				Gender		Total	
	< 20	20 - 39	40 - 59	60 +	Male	Female	Percent	Number
Satisfied with quality of conversation of DJ (Disk Jockey)	62.8	59.9	53.8	51.1	58	59.2	58.2	2941
Decent	63.9	57.6	52	47.8	55.7	58.8	56.2	2841
Vulgar	7.6	9.7	11	10.9	8.8	16.5	10	503

References

S/N	Reference
1	Cyber letter media December 2008 / Special Annual Edition Advertisement Expenditure in Pakistan
2	Demographic and Health Survey 2006-07 [National Institute of Population Studies (NIPS)]
3	Electronic Media Industry Report Gallup Pakistan 2003
4	Electronic Media Review PEMRA 2004
5	ICCI Islamabad Chamber of Commerce and Industry CAPITALbusiness January 2009
6	IPTV Strategies- I can early now by Joanne Taffee – Total Telecom, March, 2007
7	Mobile TV-Ready for Prime Time?-Total Telecom, July, 2005
8	Mobile TV Services- You go your way --- Anne Morris-Total Telecom March, 2007
9	Multimedia Content-Blending in by Lorraine Turner-Total Telecom- October, 2006
10	Mobile TV services- Lack of vision by Joanne Taffee – Total Telecom, January, 2009
11	Ofcom International Communication Market Overview 2008
12	Orient Blue Book 2007-08, Orient McCann Erickson
13	O&L Consultancy Services Report 2008
14	Pakistan Electronic Media Regulatory Authority (PEMRA) Report 2003-2006
15	Pakistan ICT Indicators Report (Statistics Division Govt. of Pakistan)
16	Pakistan Broadcasting Corporation (PBC)
17	Pakistan Economic Survey 2007-08
18	PEMRA website
19	PTA Socio-economic Impact of Mobile Phone 2007
20	Radio listened yesterday, Osani International Group UK
21	Satellite, DTH; Addressing IPTV & Triple Play Threat- APSCC (Asia Pacific Satellite Communication Council) News letter-April, 2007
22	State Bank of Pakistan Annual Reports 2007-08
23	Wikipedia website