



DIGITAL SWITCHOVER IN PAKISTAN

Towards greater understanding of the viability of digital switchover in Pakistan.

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SEPTEMBER 2016



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SUMMARY

The digital switchover from analog to digital presents enormous challenges for a developing country like Pakistan where 78 per cent household's access to information and entertainment services is through this medium. This report gives an in depth assessment of the prevailing market trends on the adoption of digital TV in Pakistan from the perspective of consumers who are under the current policy expected to bear the cost of converting their household TV from analog to digital but have very little say in its policy making and regulation. The current policy for digitalization issued by Pakistan Electronic and Media Regulatory Authority (PEMRA) is clearly seen as flawed to facilitate a digital revolution in which all citizens have a stake to be part of in this information age. This report is an attempt to begin thinking about the challenges developing countries like Pakistan face and recommends clear strategies to be adopted for a successful digital switchover and its regulation.

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INTRODUCTION

As the transition from analog to digital broadcasting became a reality in the United States, the attention of academics, policy makers and practitioners is naturally turning to how developing countries like Pakistan can follow the same path of transition. Many countries in the global south have started examining the viability of what they call the “switchover” or the transition from analog to digital. Since most of the developed nations have been ahead of other countries across the globe in planning and implementing new technologies for the digital switchover, their experiences can serve as valuable case studies for others who anticipate the transition in the coming years. Analog to digital transition represents the most significant change to television broadcasting infrastructure in its history, with production, broadcasting, regulation, transmission and household reception all affected by the process. The transition from analog to digital TV will have the largest impact on media since the NTSC standard transitioned from black-and white to color technology¹. The switchover in United States to an advanced digital television system is not one that followed a simple trajectory in which consumers merely turned off a set of technologies one day, and turn on another system the next. The transition to digital television brings with it a complex political, economic and cultural transfer that is enmeshed in turmoil. Some of the problems range from political maneuverings to economic disincentives and cultural resistance. The effects of the switchover go well beyond the technical aspects. The switchover has complex social, political and economic implications since it impacts “all segments of the broadcasting value-chain, namely: content production, transmission, regulation and reception”.²

The challenges of analog to digital transition faced by Pakistan are enormous. Firstly, Cable TV network requires a large amount of investment for digitalization of their analog networks to be able to convert every household to digital. The operators, in the meantime, do not have any regulatory assurances for the protection of their investments and have a very small likelihood of Government help to ease the burden of digitalization as seen in other developed countries that have successfully achieved digital switchover. Secondly, the end users or viewers who are the final arbiter of digital TV adoption are not opting to adopt digital TV services due to lack of knowledge about the technology, the increased financial burden of purchasing a set-top box to view the services and content that is already available on analog TV. Lastly, Pakistan Electronic Media and Regulatory Authority (PEMRA) has underestimated the rejection determinants of digital TV and flawed the regulatory framework for digitalization without having a clear vision or strategy in design and implementation of

¹ Brinkley, Joel. (1997), *Defining Vision: The Battle for the Future of Television*, New York: Harcourt Brace Company.

² Commission of the European Communities (2003), *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: on the Transition from Analogue to Digital Broadcasting*, <http://ec.europa.eu/>, Accessed November 20, 2015.

digitalization process in Pakistan. Furthermore, no mechanism has been devised to successfully regulate content of the digital cable TV network after implementation of Conditional Access System (CAS).

The aim of this report is to provide an understanding of the challenges of digital switchover in Pakistan. Even though end users or viewers may be the final arbiters of digital TV adoption independent, in-depth, policy research on digital TV adoption carried out in Pakistan that takes the user's perspective on policy making and regulatory issues is extremely rare. Very little independent research has been carried out on adoption, diffusion, policy making and regulation of digital TV in Pakistan. Due to the lack of available research resources it becomes very important to conduct independent policy research that examines the adoption of digital TV from the point of view of users who are expected to bear the cost of converting their household TV from analog to digital but have very little say in its policy making and regulation. Many experts in the industry see the implementation of digital TV not because it can be used in new inventing ways but because it's happening everywhere else and the regulators in Pakistan does not want to look out of place or behind the digitalization race.

This empirical report on the issue of adoption, diffusion, policy making and regulation of Digital TV in Pakistan is expected to pave way for further understanding of the market for scholars, academics and policy makers in the country and in international community as well. The consequences of failure of digital switchover in Pakistan can lead to missing future innovation, interactive applications and commercial advantages of the technology. The switchover also provides an opportunity to address the digital divide gap by providing access to broadband internet services via digital TV sets and freeing up of spectrum in the 750MHz range for 4G/5G wireless broadband having greater penetration. All of these make it more important for Pakistan to complete the digital switchover process and to help achieving it we need to examine in more detail what the end users know about digital TV and what factors influence the decision to adopt or not adopt digital TV services along with regulation of content.

HISTORY OF ANALOG NETWORKS IN PAKISTAN

Analog Cable TV networks were first introduced in Pakistan in the early 1990s. It started out as an affordable service to relay Indian satellite TV channels and CD content primarily Bollywood movies to people that were unable to afford the luxuries of expensive pay per view satellite channels. Predominantly analog Cable TV networks sprung up in metropolitan cities of Pakistan like Karachi, Lahore, Islamabad, Multan, Peshawar and Quetta where local cablewalas offered 20 to 30 analog channels. The local cable TV services became very popular when CNN started live telecasting of gulf war in the 1990s. The entry of bigger entrepreneurs and corporate led companies resulted in increased channel carrying capacity and consolidation of small operators. The local operators were only able to offer 20 to 30 channels owing to the cost of upgrading the network while MSO (Multi System Operators) were able to offer 50 to 70 TV channels. This resulted in many bigger operators franchising their signals to smaller operators. With the passage of time and more people getting involved in the industry Cable TV was spread to all corners of the country on the business model of subscription based revenue. Analog Cable TV has now become the most popular form of receiving TV signals in Pakistan and according to some estimates 78 per cent of the urban population in Pakistan has access to it³.

The phenomenal growth of analog Cable TV industry in Pakistan has been the result of unleashing the entrepreneurial energies of a generation waiting for an opportunity. Since there is no dataset which details the exact number of Cable TV subscribers in Pakistan it is difficult to guess the exact number of households that are connected to these networks. According to PEMRA there are 2346 licensed Cable TV networks operating in the country and it is estimated that around 8 to 10 million households are connected to these networks. The competition friendly regulatory environment has generated a huge numbers of cable television providers with just as many franchisers who own the final mile of connectivity to the consumers and pay the service provider for services per subscriber. The result is a market that has somewhere between 40 million to 60 million customers, depending on whether you ask the operator or franchisers.

The Cable TV industry in Pakistan is set to face a serious up-gradation as the regulatory authority PEMRA had set a deadline for digital switchover of analog networks to digital for December 2015 across Pakistan. The switchover is expected to bring greater channel carrying capacity, improved quality of service and provision of value added interactive service. It is also expected that after the switchover freed up spectrum in 700MHz and 800MHz bands could be auctioned for mobile broadband network offering 4G and 5G services with some technical refinements. The regulatory authority

³ Khan. A, (2010), Digital Television Age in Pakistan: A Policy Perspective http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1657768
Accessed December 03,2015

PEMRA without any public consultation had issued the following plan for digital switchover in Pakistan starting the digitalization process in first quarter of 2009 and achieving complete transition by December 2015. The plan from the outset was extremely ambitious setting staggering dates 2009-2015 for complete transition and missing out on the complex process of content regulation on the digital cable TV networks.

Phase Wise Planning for Digital Switchover in Pakistan	
Phase-1	Issuance of Digital Cable TV licenses in the Metropolitan cities. Conversion of Headend in Metropolitan cities in which fiber optic and HFC networks have already been deployed like Karachi, Lahore, Islamabad, Peshawar, Quetta, Multan and Faisalabad.
Start	First Quarter 2009
Completion	December, 2011
Phase -II	New Licensing of digital cable television networks and conversion of existing license at district levels.
Start	January, 2010
Complete	December, 2015
Transition	September, 2016 (New Deadline)

Source: PEMRA Annual Report 2009⁴

⁴ PEMRA (2009), Annual Report

EXAMINING MARKET DYNAMICS OF CABLE TELEVISION

To better understand the potential for digital cable television in Pakistan it is important to analyze the socio economic factors which influence the adoption and diffusion of cable TV in a household. In Pakistan's context, socioeconomic conditions are a fundamental issue of the market behavior, since most Pakistanis belong to the most underprivileged classes. This analysis can help all stakeholders to better understand the market dynamics and devise the digital switchover policies in light of this pioneering research especially from the transition towards the regulation of content. Secondly, the transition from analog to digital also impacts the entire food chain of content transmission and delivery at an end user level. Regulation of content on digital cable television networks is also set to be a challenge for PEMRA especially on protecting the national interest of the country and spreading of hate speech and violent extremist's propaganda on these networks.

METHODOLOGY

To conduct this research primary data was collected using interviewer administered questionnaire survey methodology involving random household sampling technique. The interviewer administered questionnaire survey is considered to be the most appropriate methodology to collect representative data of the target population within a limited time frame and resources. This questionnaire-based method also addresses the issue of reliability of information by reducing and eliminating differences in the way in which questions are asked and facilitates the collection of data within a short period of time from the majority of respondents⁵. An overall sample of 960 respondents was collected from three cities of Pakistan. Different factors such as social, economic, ethnic, cultural, modernization and access to TV were considered before selecting the three research locations, i.e. Karachi, Lahore and Quetta.

TABLE 1 BREAKDOWN OF SURVEY RESPONDENTS

City	Respondents	Male	Female
Lahore	341	200	141
Karachi	320	193	89
Quetta	299	210	89
Total	960	603	357

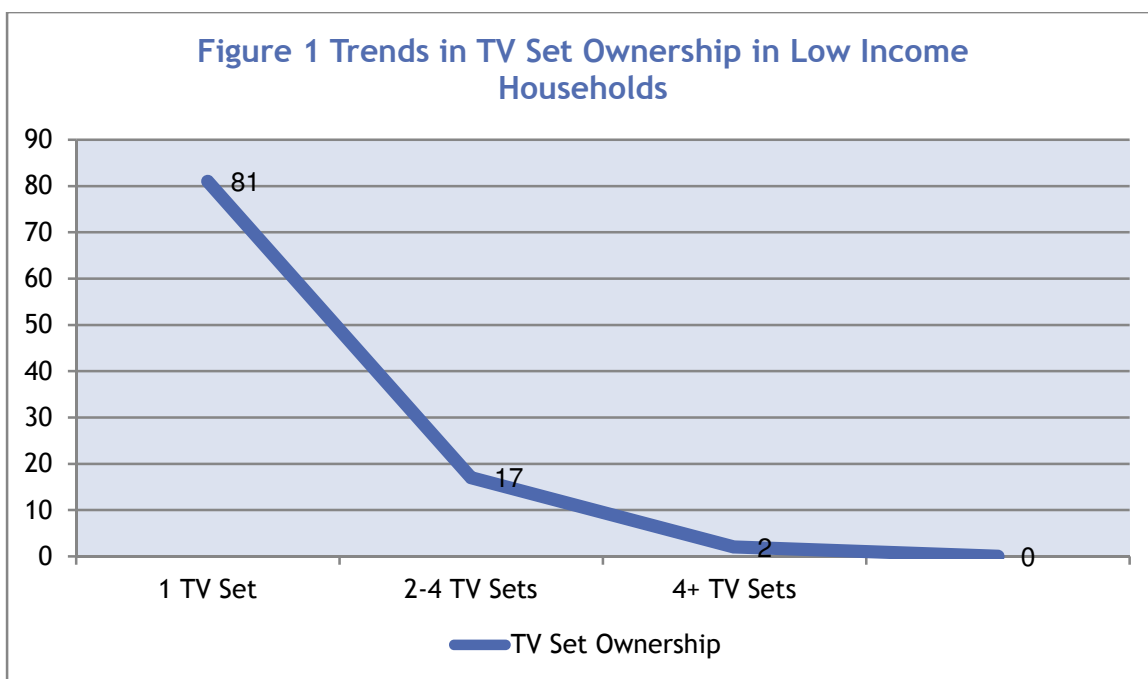
Market analysis for digital switchover on the basis of socio-economic status can give us a very detailed picture of the marketplace for digital TV in Pakistan. Previous research on digital switchover in poor economies also highlights the importance of considering household income distribution as one

⁵ Walliman, N. (2001), *Your Research Project: A Step-by-Step Guide for the First Time Researcher*, London, Sage Publications

of the major obstacle for achieving successful digital switchover. As seen in numerous cases flawed policies that do not ruminate on economic status of household income distribution can have negative impact on adoption of information communication technologies such as digital television, broadband internet and mobile phones. Taking in to consideration the importance household income has on deciding the technology to be adopted makes critical the analysis of current data on the foundation on household income. The data gathered for the research is categorized on the basis of household income. The income levels have been categorized in to three levels i.e. low income household earning PKR 12,000 and less, middle income household earning PKR 12,000-50,000 and high income household 50,000 and above.

TRENDS IN TELEVISION OWNERSHIP

When television first became available in Pakistan, it was very much a product of the wealthy and upper middle class. However with the growing ownership, televisions are now being considered as a common appliance in growing developing countries⁶. The continuing growth of television ownership is happening most quickly in developing countries of Asia, Africa and South America. Asia as a whole is likely to see the increase television ownership to 500 million television household, making the region three times as a large region as Europe⁷. The ownership of television is largely dependent on the income of the household and its social status in context of Pakistani society.



⁶ Harrington, K. & Harrison, B. (2006), *Trends in television energy use: where it is and where it's going*: National Appliance and Equipment Energy Efficiency Committee Australia. <http://www.energysrating.gov.au/library/pubs/2006-aceee-paper-harrington.pdf>, Accessed 2 December 2015.

⁷ Bignell, J. (2004), *An introduction to television studies*. Routledge.

According to the survey results 81 per cent of the low income households have ownership of a television set followed by 17 per cent households having ownership of more than one television sets. Only 2 per cent of the low income households have ownership of four or more televisions sets. The growing ownership of television sets in low end household points out to the role played by second hand televisions. Developing countries are favorite e-waste dumping grounds of the developed world and most of the aged electronic products are reused or rebuilt to be sold in these markets⁸. Second hand television sets are available in markets for little as 40-160 US\$, a price that ought to hasten substantially the adoption and diffusion of television products. Figure 1.2 shows the trends of television ownership in middle income households i.e. 12,000-50,000. As seen in a Pakistani context there is an increase in the ownership in the number of television in the households as the income level rises of that family.

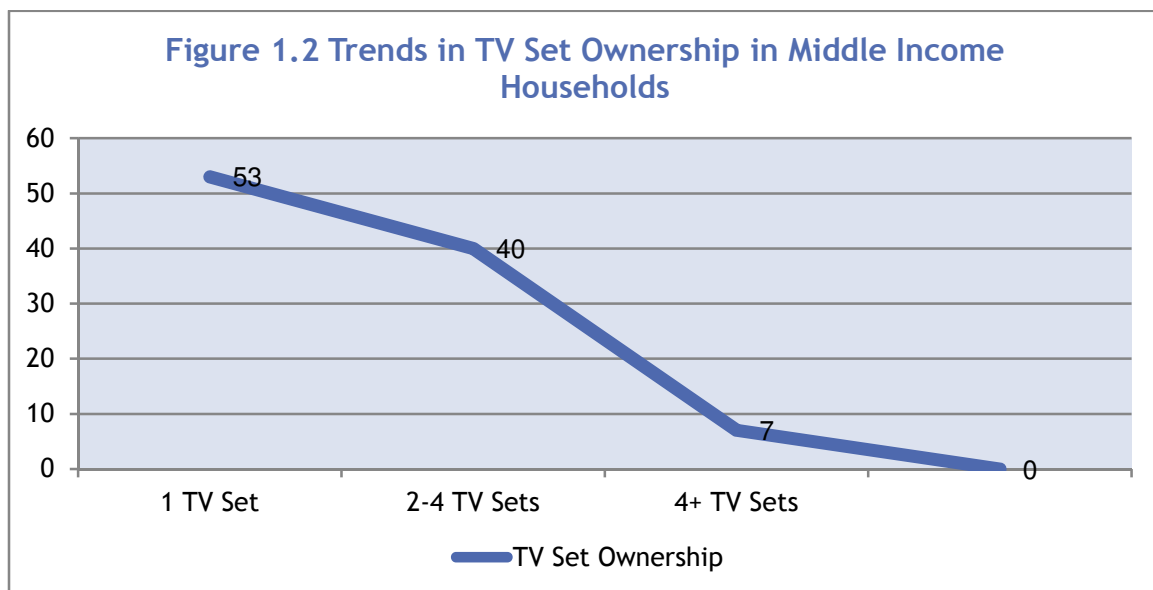
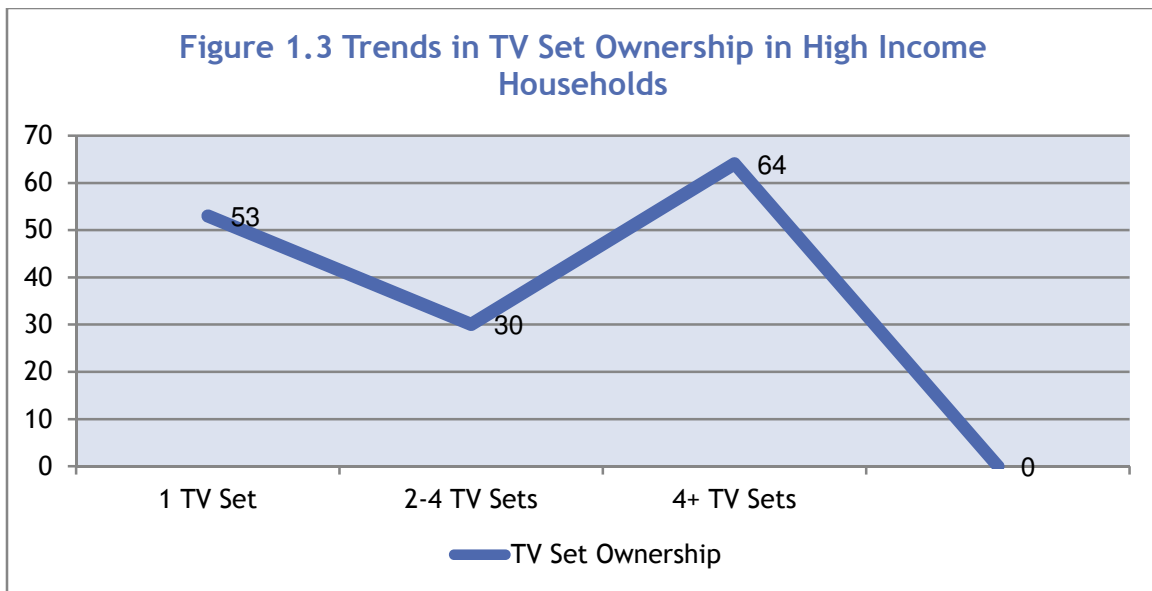


Figure 1.3 shows the trends in television ownership in high end families. The rise in social status and increase in income contributes to the growth in ownership of number of television in household⁹. High end families in Pakistan have a high percentage of ownership of four or more television sets. The higher the income levels are of a household the greater are the chances of higher number of television sets and similarly the lower the income levels are the chances are the ownership of number of television sets decline.

⁸ Hanaki, K. (2008), *Urban Environmental Management and Technology: Volume 1 of Csur-ut Series: Library for Sustainable Urban Regeneration*; Springer

⁹ Wang, S. & Hu, A. (1999), *The political economy of uneven development: the case of China Asia and the Pacific*; M.E. Sharpe



TRENDS IN DEVELOPMENT OF TELEVISION CHANNELS IN PAKISTAN

Television in Pakistan started in 1964 only after a private sector project led by industrialist Syed Wajid Ali in partnership with Nipon Electric Company (NEC) from Japan. After a series of successful pilot testing of transmission in the coming years the project was taken up by the government under Ayub Khan in greater national interests of Pakistan. President Ayub Khan seeing the potential of this incredible media appointed a leading engineer Ubaid Ur Rehman to drive the project. On November 26, 1964 the first official television station commenced transmission broadcasting from Lahore followed by Dhaka in 1965. Four more stations were established across the country in Rawalpindi, Karachi, Peshawar and Quetta. For many years only one state controlled PTV channel was available in Pakistan and broadcasting was restricted to only a few hours in morning and evening. Moreover, hardly anyone had more than one TV, and many did not have TV at all. These factors meant that less time was spent in front of the TV, and that the time spent was mostly together with other family members. Thus, TV-watching occupied a smaller part of each family-member’s time and it was mostly a relatively social way of spending time.

By 1988 Pakistan was set for another media revolution when semi-government TV network by the name of Peoples Television Network under the umbrella of Shalimar Recording Company was introduced later renamed to (STN) Shalimar Television Network. STN for the first time in Pakistan started the transmission of CNN International on the terrestrial beam. Later on in 1990 it entered in to an agreement with Interflow and renamed itself to Network Television Marketing (NTM)

introducing a fresh new set of Hollywood programming for the viewers in Pakistan. Unfortunately, due to financial losses NTM shutdown in 1999 closing with it CNN, BBC World and DWTV.

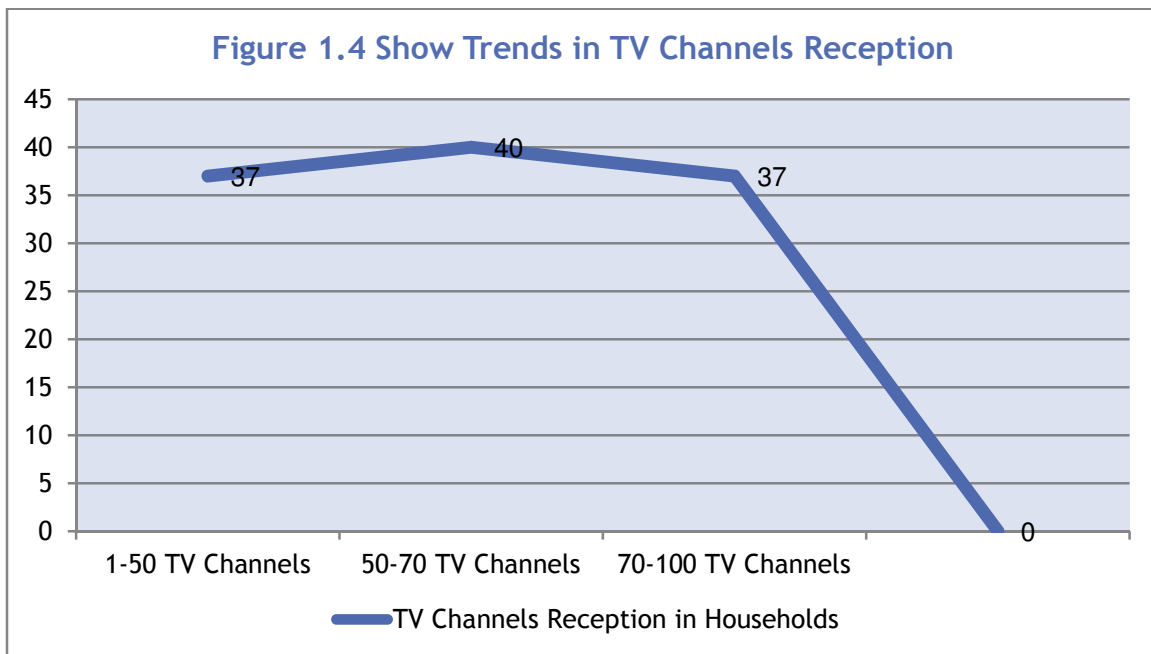
During the period in the 90s when Pakistani media landscape was getting ready to surface CNN was emerging as the world's first global satellite TV channel reaching all the corners of the globe. This new global media network was also used as a new tool in shaping public acceptance of U.S. foreign policy starting from the build up to the first Persian Gulf War. The reporting of the Gulf War was the start of transnationalization of media in the global context. The live coverage of hours of televised bombardments, scud missile attacks, and laser-guided missiles swooping down from invincible aircraft in the best Hollywood style showed a cinematic extravaganza somewhere between Star Wars and Lawrence of Arabia. This was also the first time when people in Pakistan had real access to live information on war events as it unfolded. The coming of free to air satellite channels more and more people wanted to tune in to the Hollywood style broadcasting of war events and it was bonanza time for satellite dish business in the country.

By the closing of the 20th century, a transnational borderless media system had developed, driven by a series of economic reforms that included the liberalization of the broadcasting industry and opening it up to private TV channels. In 2002, government of Pakistan allowed private TV channels to operate openly and telecast their own news and current affairs content. This all led to an explosion in the Pakistani media industry with the entry of many foreign and local players like Rupert Murdoch's Star TV Network, MTV, Zee TV, Geo TV and others. Transnational TV channels multiplied and matured in diversity over the next decade to include some of the most innovative and influential channels of our times, like Al-Jazeera, CNN, BBC, Geo TV, Hum TV and Star TV Network. Many of them became the heart of the transformation of regional media cultures, most noticeably in the Middle East and South Asia¹⁰. The local media industry in Pakistan, hampered by a lack of capital, talent, and up-to-date facilities faced an uphill battle against the well-established transnational competitors, especially the likes of Star TV and Zee TV networks with a global reach and audience. The broadcasting of popular Indian television channels such as Zee Network and Star TV on cable TV in Pakistan was sharply contested by the local broadcasters under the pretext of national identity and cultural protectionism. The local satellite television broadcaster started lobbying against the broadcasting of Indian media content on cable TV networks in Pakistan, also raising the need for regulatory intervention in the placement of local channels on cable TV networks, allowing them to compete against the transnational media flowing across the border. The avalanche of transnational media in Pakistan also affected the free to air advertising revenues based business model of the local media channels, as their advertising revenues started to decline whenever transnational Indian

¹⁰ Chalaby, J. (ed.) (2005) *Transnational Television Worldwide: Towards a New Media Order*. London: I.B. Tauris.

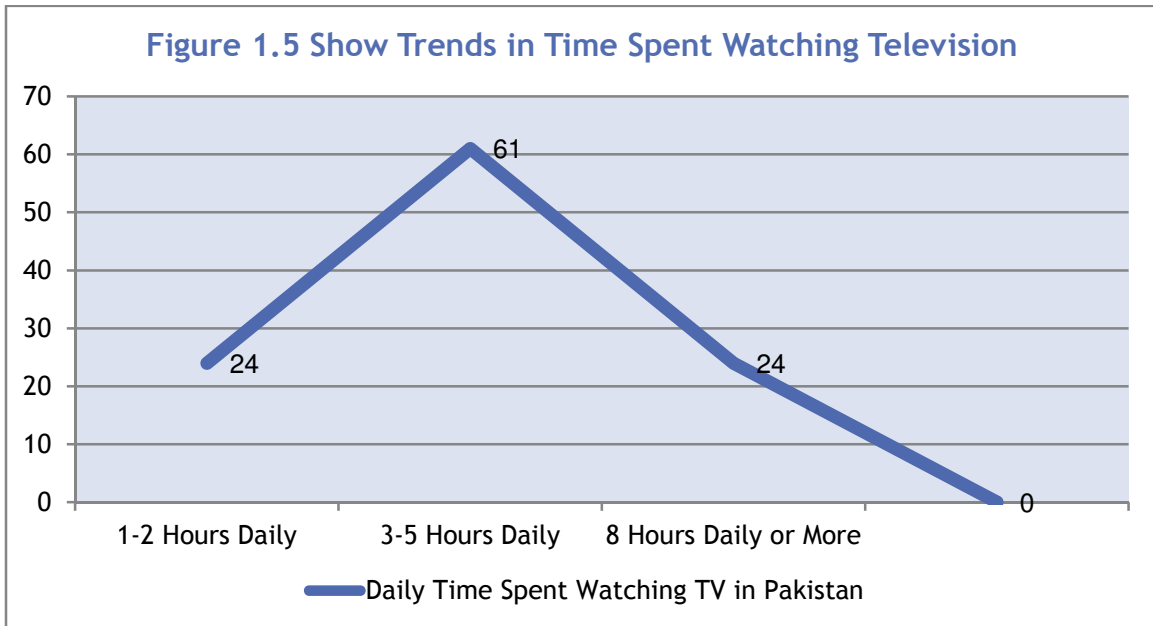
media content was allowed on the networks. Most of the major regional corporation's preferred advertising during the popular transnational Indian soaps; this severely affected the local broadcasters' ratings and revenues.

But during the last few years the situation changed dramatically with the development in television and broadcasting networks. More and more channels have been made available providing various types and kinds of contents in a variety of languages. PEMRA has licensed 107 satellite TV channels for broadcasting content inside Pakistan also including projection of Indian films and popular dramas. The number of licensed satellite TV channels exceeds the channel carrying capacity of cable TV networks in Pakistan and one of the primary reasons for which broadcasters are pushing the regulatory agency and cable TV networks towards digitalization enabling them to carry more channels with a better quality. Figure 1.4 shows us the number of TV channels that are received by households in Pakistan. The maximum numbers of channels that are available to household in Pakistan are 100 but due to the technical limitations of analog networks and poor last mile infrastructure only 23 per cent of the household are able to receive the maximum number of channels. More than 40 per cent of the household are able to receive around 50-70 channels and 37 per cent of the household are able to receive only 50 TV channels.



The development in broadcasting and TV network has brought radical changes in the households. Each family member spends more time in front of the TV set, and less often together with other family members. Due to the increasing number of channels and variety of content available for all

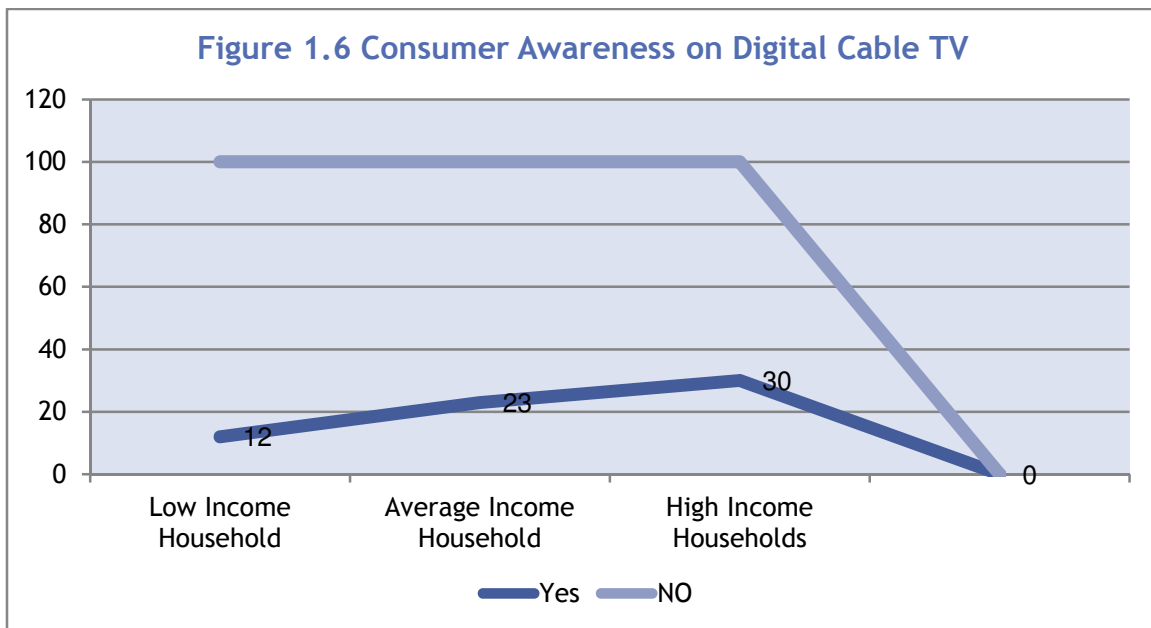
age groups household seems to be spending more time in front of television sets in Pakistan. Figure 1.5 shows some interesting readings on the time spent watching television in a day in a Pakistani household.



The average Pakistani teen spends about 30 hours a week watching television, with the heaviest viewers coming from low-income households. The above data in large part concerns only traditional analog TV viewing leaving out DVR/time-shifted TV viewing (such as video-on-demand). As such, it is only a measure of legacy TV viewing and does not include viewing via connected TV devices. While DVR and time-shifted TV viewing is still in infancy it is expected to increase the viewing time significantly with the coming of set-top-boxes and video-on-demand services. The spread of high speed broadband internet and streaming services is also likely to increase the amount of time spent on television viewing. Furthermore, consumer awareness about new services and technology available such as digital Cable TV, Video on demand services and online streaming services also limits the time spent on viewing television. Given the rise of mobile devices and changing viewing habits of millennia it is expected that streaming services will catch up with linear television viewing in major metropolitan cities of Pakistan and analog cable TV is set to remain the dominant form of viewing television in suburbs and rural cities of the country.

THE SWICTHOVER

The analog to digital transition ranks as one of the most complex technological transitions of the present era. Leading experts like Nuechterlein and Weiser¹¹ points out that the transition will depend on widespread consumer awareness of how digital television differs from conventional television and why it is worth investing in a new technology from a household's perspective. Preliminary research on the subject of adoption and diffusion; policy making and regulation of digital TV carried out by Weerakkody¹² indicated a severe lack of user awareness about digital TV, its attributes and adoption. Similarly the survey results from Pakistan in figure 1.7 shows very high percentage of consumers lacking awareness and knowledge about digital TV services in Pakistan. One of the major reasons for this is the lack of educational efforts by all stakeholders to raise public awareness about digital TV services.



The overall survey results clearly indicate a lapse in consumer education and strongly suggest that additional awareness initiatives around digital services and switchover are needed for consumers nationwide. Widespread and comprehensive consumer education efforts need to be implemented by PEMRA along with involving all the stakeholders to educate consumers about digital cable television services if Pakistan is to meet the deadline for digital switchover by 30th September 2016. In US two agencies Federal Communications Commission (FCC) and National Telecommunication and Information Administration (NTIA) were directly engaged in consumer education efforts regarding the digital TV services and its transition. FCC in collaboration with private and public sector entities

¹¹ Nuechterlein, J. & Weiser, P. (2005), Digital crossroads: American telecommunications policy in the internet age, MIT Press

¹² Weerakkody, D. (2006), Are we there yet? The adoption and diffusion of digital TV in Australia since January 1, 2001, Paper presented at the Australian and New Zealand Communication Association (ANZCA) Annual Conference, Adelaide, SA, Australia, 5-7 August

were trying to raise the general awareness of digital TV services and the effects of digital switchover by preparing and issuing consumer publication, web materials and holding various conferences and events. Similarly, PEMRA needs to take the lead in educating consumers and reach a consensus as to what exactly their responsibility is in educating the consumers nationwide. Unfortunately, no one is in charge for the whole transition process, there is no comprehensive planning effort to address important issues like content regulation, adoption of digital cable TV services and there isn't even any effort underway to assess what portion of the public isn't going to be prepared due to lack of awareness or information about digital TV services.

Digital cable television experts like Hamelink¹³ sees the adoption of new technology and its policy making and regulation as a form of social gambling. This is due to having only partial knowledge about a technology, its capabilities, potential applications, and effects. We also do not know what a technology will be actually used for once implemented or even if it will be adopted at all by end users. Hirschheim¹⁴ presented three views on the social impact of new technologies. They are the optimistic view which takes the utopian approach of technology being all positive and is themed as leading to progress of human kind. This view is also supported by famous theorist McLuhan¹⁵. In contrast the pessimistic view supported by Beniger¹⁶ and Foucault¹⁷ sees technologies as creating harms and increasing the power of those with control and authority. The pluralist view of technology sees technology as neutral and its use depends upon the wishes and desires of the designers and controller of technology which leads to positive, negative and neutral outcomes depending on how they are employed or used. Similarly, when policy making about a new technology such as digital cable TV issues related to the social impact of these new technologies and replacement of an already established technology needs to be considered in depth to ascertain the potential capabilities instead of regulating them as a form of social gambling.

It has also been argued by theorist like Weerakkody and Tremblay¹⁸ that technologies fail or get adopted very slowly due to lack of user demand, poor marketing or regulatory policies. This supply side technological imperative assumes all technology as good but that significant variations in diffusion rates occur for a given new technology based on the strategic and tactical policies imposed on the technology and into a given cultural and economic environment. Any new technology once adopted, generally goes through a slow rate of diffusion in the early stages while the rest of the

¹³ Hamelink, C.J. (1988), *The technology gamble. Informatics and public policy: A study of technology choice*. Norwood, NJ: Ablex Publishing

¹⁴ Hirschheim, R. A. (1985), *Office automation: A social and organizational perspective*. John Wiley and sons: New York

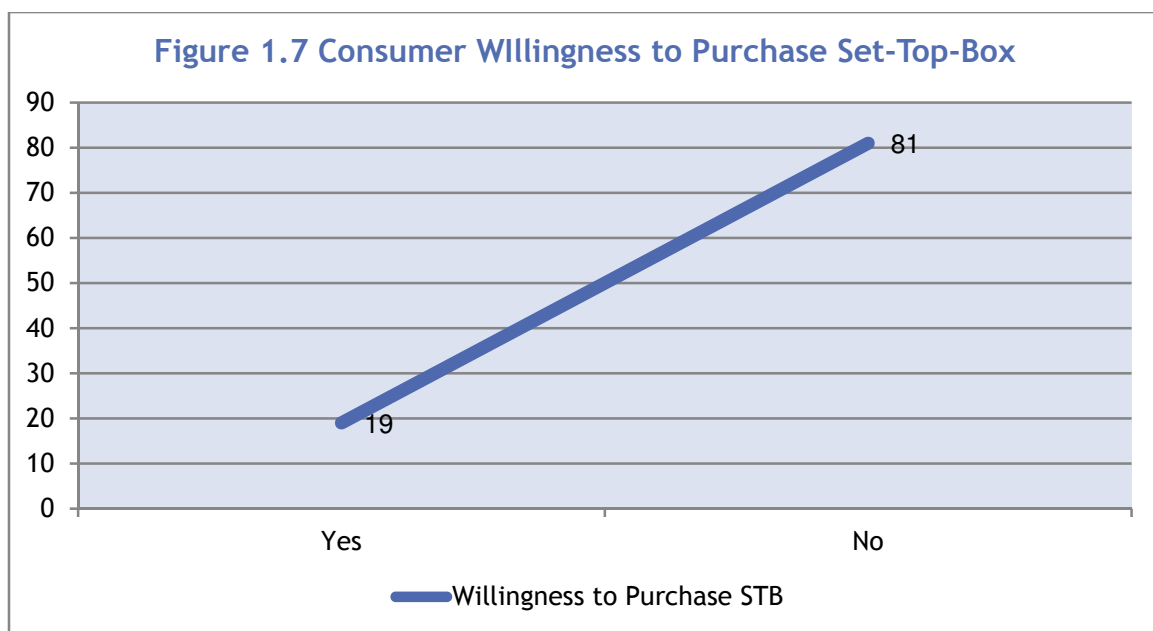
¹⁵ McLuhan, M. (1969), *The Interior Landscape: The Literary Criticism of Marshall McLuhan 1943- 1962*, Ed. Eugene McNamara, McGraw Hill, New York

¹⁶ Beniger, J. (1986), *The Control Revolution Technological and Economic Origins of the Information Society*, Harvard University Press

¹⁷ Foucault, M. (1979), *Discipline and punish: the birth of the prison*, Vintage Books, the University of Michigan

¹⁸ Weerakkody, D. (2006), *Are we there yet? The adoption and diffusion of digital TV in Australia since January 1, 2001*, Paper presented at the Australian and New Zealand Communication Association (ANZCA) Annual Conference, Adelaide, SA, Australia, 5-7 August

population follows the wait and see principle hoping for the price to come down¹⁹. The other significant factors influencing diffusion are the services the new technology can provide and how much users are willing to pay for those services²⁰. If the established analog TV is satisfactory to users, they need additional incentives or an enhanced value in terms of financial costs and service performance, to be persuaded to adopt the new technology. Stephens²¹ illustrated how a new technology when first introduced will generally be carrying out the same functions of the old technology it was meant to replace. This fits with the reality that digital cable TV so far is, as it mostly carries out the same functions and content as the existing analog TV making end users question its value and discourages the adoption of digital cable TV. As seen from experience a large number of consumers may remain satisfied with their present analog TV for a quite a while to come and diffusion of digital TV will proceed very slowly unless policies are made to address the issue of content versus cost argument of digital TV from consumers' point of view. The willingness of consumers to pay additional cost for the services and the necessity for consumers to purchase STBs will slow the development of digital cable TV. The present research data in figure 1.7 shows that 81 per cent consumers are not willing to pay initial cost for set-top boxes to receive digital cable TV and the remaining few who are willing for the initial investments will be only be willing to purchase low end STBs with little interactivity possibilities.



Experts in the industry argue that the government of Pakistan should subsidize the cost of the set-top box or provide them free to users to encourage digital TV adoption if it is to meet any set deadline

¹⁹ Hawkins, D., Neal, C., Quester, P., & Best, R. (1994), *Consumer behavior: Implications for marketing strategy*. Sydney: Irwin

²⁰ Owen, B. (1999), *The internet challenge to television*, Cambridge, MA: Harvard University Press

²¹ Stephens, M. (1998), which communications revolution is it anyway? *Journalism and Mass Communication, Quarterly*, 75 (spring), pp. 9-13

for digital switchover. In UK the government decided after observing digital TV for a full year its plan for the digital future. In which analog transmission would only cease on the basis of two tests: availability and affordability. Digital signals would have to match the availability of analog ones, approximately 99.4 per cent of UK population and 95 per cent of consumers would have to have access to digital equipment in their homes before switch over was completed. The definition of affordability meant that prices were within reach of people on low and fixed income households. It is also argued by experts in the industry that the government should consider spending some of the billions it earned from the sale of radio spectrum to lower the cost of access to digital services by subsidizing set-top boxes. The Berlin experience in Germany also highlighted some important factors related to consumers' purchase of set-top boxes that were very important for the success of digital TV transition in the city. Subsidies were provided to households that might have had difficulties in affording a necessary set-top box. In Japan the Government has increased subsidies to promote the penetration of digital television by providing set-top boxes free of charge to 2.6 million low income households. In China Cable Companies were offered the regulatory carrot of a subsidy or soft loan and Government in Beijing provided a direct subsidy of 100 RMB to the Gehua cable company for every digital set-top box it provided to its customers. In US Department of Commerce's National Telecommunications and Information Administration (NTIA) launched the Digital-to-Analog Converter Box Coupon Program worth \$ 1.5 billion designed to help ease the transition to digital. According to research firm Nielsen the money spent on providing subsidy for the digital transition will pay off in the long run since the important thing to remember is that the transition is going to be bring a lot of benefits in the form of reclaiming the spectrum which will further allow it to be used for something more valuable than TV broadcasting like consumer broadband.

THE CHALLENGES TO SWITCHOVER

The transition from analog to digital is not a simple trajectory in which households merely turn off a set of established technologies one day and turn on another system the next. The effects of switchover to digital go well beyond the technical aspects by bringing with it complex economic disincentives and cultural resistance. The experiences of developed countries can serve as valuable case studies for developing countries like Pakistan anticipating the transition in coming years. It is imperative that Pakistan Electronic Media and Regulatory Authority (PEMRA) the body responsible for planning and implementing the policy for digitalization should examine the adoption and diffusion of digital TV from the point of view of consumers who under current policy and practices are expected to bear the cost of converting their household from analog to digital but have very little say in its policy making and regulation. Another important challenge apart from the adoption is the regulation of content on digital cable television networks. Monitoring content on analog networks was an easy task compared to digital cable television as the same signal broadcasted from the headend was received at end user household making it easier to ban pornography, or displaying of inappropriate violent content stimulating racial intolerance in a multi ethnic society like ours, as well as protecting minors from the programme contents that can harmfully influence on their physical, mental or ethical development. Moreover, the vigilant neighborhood viewers also helped in regulation of inappropriate content by directly complaining it to the operator or regulator. But all that is set to change with the coming of digital cable television and implementation of conditional access system (CAS) at headends. The entire signals stream will be encrypted to ensure that all customers have to pay in order to watch TV and since most CAS are highly proprietary, surrounded by a lot of secrecy monitoring what content is streamed on the networks will be a massive regulatory challenge which PEMRA has entirely overlooked in its digitalization plans. Media in our age has a very pivotal role in shaping the perception of society what we know about the world is largely based on what the media decide to tell us. More specifically, the result of this mediated view of the world is that the priorities of the media strongly influence the priorities of the public. Elements prominent on the media agenda become prominent in the public mind. Hence, regulating what content is streamed on digital cable television will be critical for the national sovereignty and protection of our culture from transnational media.

In a developing country like Pakistan where the economic conditions hugely constrain the spending power of families, cable television has played an important role in providing the most affordable form of entertainment and information services to the general public not just in urban areas but in less developed rural areas as well. Given the lack of awareness about digital cable TV services and the financial burden each household will have to bear for converting from analog to digital the

digitalization plan is clearly seen as not built to facilitate a digital revolution in which all citizens have a stake to be part of in this information age. The existing policy is intended at forcing consumers in to purchasing set-top box to be able to view digital television services which in long term will be a serious policy failure since majority of the poor households will be unable to afford the conversion from analog to digital. PEMRA should also explore the provision of providing financial assistance to households that are unable to purchase set-top boxes by providing subsidy as done in other countries so that poor households are not forced in to disconnection from the information age in an era of information society.

The regulatory authority clearly needs to see the experiences of other countries that have followed the path of successful transition and design a road map to guide the process and time frame for discontinuing the analog signal in the light of prevalent market dynamics. It is also suggested that PEMRA which at present is not technically capable of overseeing and coordinating the activities related to digital switchover should form a new body comprising of experts from the sector to oversee and lead the activities pertaining to digital switchover if Pakistan is to successfully switchover to the digital era.

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