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# Interactive Television: Knowledge, Attitude, Practices and Potential Opportunities in India

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**ABSTRACT:** This research focuses on the study of the uses of TV and the potential for interactive TV services among the Indian users and operators. A survey and in-depth interviews were conducted as part of the study. The results show that TV, computer and mobile phone usage is high among the respondents. Concerning TV viewing habits, most do it in a collective manner. While watching TV viewers do other activities like working on computers, speaking with others and domestic work. Two thirds of the participants regularly recommend TV programs, but they do it in traditional ways, none mediated, since the iTV domain in the Indian market is still in its early stages. Regarding the expectations for upcoming iTV services, the majority of respondents are highly interested in having more interactive services for communication, recommendation; participation in shows/contests and a small percentage for shopping through the TV. There is a warm welcome for social interactive features in TV among the users and operators. The study has also confirmed that there is a good scope and market for ITV services.

**KEYWORDS:** iTV, Social iTV, Viewing habits, India, TV Distribution.

## 1 INTRODUCTION

Media technologies and content have a very important place in society. Television (TV) is holding an important role among them. Some may argue TV is an idiot box, some say that is an intellectual box, but TV proves itself to be an inevitable box.

TV provides information and entertainment and also supports communication (Kalwachwala and Joshi, 1990). It has emerged as a remarkable medium of communication and has revolutionized the lives of people (Reddi, 1994). TV proves to be a medium which can be used effectively to reach and teach (Kumar, 1998). Its penetration and usage are remarkable in developing countries providing an opportunity for benefiting from innovative features and programs (Arulchelvan, 2010).

TV has faced many innovation and developments from its inception. Interactive television (ITV) is a central issue in the TV industry nowadays. It offers the immediacy of interaction with content allowing instant feedback and a wide variety of interactive applications. People can use it in three ways as to control TV shows, buying products/ services and for voting on shows (Burke, 2011).

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Since, the earliest days, producers were trying to make their programs more dynamic through participation. *Winky Dink and You* is one of the best earliest attempts. The 1964 AT&T's picture telephone was also one of the earlier innovations in video interaction (Constantakis-Valdez, 2011). During the 1970s, the most publicized ITV experiment was QUBE.

### 1.1 SOCIAL INTERACTIVE TELEVISION

Social Interactive Television (SITV) is a recent development in the area of ITV. It focuses on new opportunities to the viewers to socialize through the TV screen. Features associated with SITV include inviting friends to share video content and to start viewing at the same time (Oumard et al., 2008). SITV features include sharing the TV presence information, freeform communication and enhanced information (Cesar and Chorianopoulos, 2008, Harboe, 2009).In this area, SMS TV chat and AOLTV were one of the first solutions to be launched. In 2001, the research community started exploring SITV in projects like 2BeOn, from the University of Aveiro. AmigoTV from Alcatel, Media Center Buddies from Microsoft Labs and ConnectTV from TNO are other successful pioneer SITV experiments. Meanwhile a number of corporate research labs like Alcatel-Lucent, Microsoft, Google/Motorola, PARC, AT&T, and Siemens have been developing their SITV prototypes/concepts (Harboe, 2009).

### 1.2 USES OF SITV

TV, in its interactive form serves many social purposes, such as providing topics for conversations, easing interaction and promoting the feeling of togetherness (Lull, 1990). SITV offers distant TV viewers a joint TV viewing and communication experience (Schatz et al., 2007). In the 2BeOn experiment, users agreed that the social features lead to a higher tendency to start a conversation, prompted either by viewing the same channel or by direct channel recommendations (Abreu and Almeida, 2010). This was confirmed in the SITV2 experiment that showed that participants wanted to be aware of their friends' availability and with the support of that information; they were motivated to interact with them. Once they were viewing together (mediated by the iTV platform), they would usually send messages/emoticons and sometimes this would end up with a phone call (Harboe et al., 2008). A survey of the Connect TV experiment showed that more than half of the participants were interested in the ITV services and willing to pay for the services (Boertjes et al., 2010).

A more recent research project, WeOnTV, was implemented and tested in Set-Top Boxes of a commercial iPTV service in Portugal. It showed that participants were highly motivated for chatting while viewing TV, for sharing the channel they were watching and for sending program recommendations to their buddies (Abreu et al., 2009).

Rangaswamy (2008) said that, the TV viewing is overwhelmingly shared and diverse among people. Adoption of interactive TV technology and services, offering novel design to fit contexts will be good for the next generation of TV industry. The referred projects and other results from literature are clearly showing that there is a growing field for Interactive TV.

## 2 TV MARKET IN INDIA

India is the world's third largest TV market with 138 million TV Households next to China and USA. Cable and Satellite penetration has reached close to 80%. The TV and broadcasting industry has grown tremendously over the last two decades, with double digits. The industry counts for more than 600 million viewers and an offer higher than 550 channels. Even though India is the largest media consuming market, the size, scale and profit of the industry is limited. Despite this large penetration of TV, the exploitation of potential interactive services and features is still limited. At the same time, there are 88 million non-TV households indicating the potential for growth (FICCI & KPMG, 2012).

Apart from the 500 channels offer, there are still more than 250 channels waiting for approval as there is a growing optimism. A great demand is expected for satellite bandwidth with the introduction of HD channels, HITS platform, DTH expansion, new channels and VSAT (FICCI & KPMG, 2012). The pay TV offer in India includes: 1) Cable TV; 2) Direct-To-Home (DTH) - via satellite, and; 3) Internet protocol TV (IPTV). Pay TV households increased to an average of 100 million (PWC, 2012).

### 2.1 TV DISTRIBUTION CHARACTERISTICS AND OPERATORS

The TV distribution industry has been mainly run by small operators. The emergence of large operators (MSO) has been changing the market, mainly in the major cities were they are concentrated (Nokia, 2011). Cable TV forms the backbone of the distribution. It has a wide penetration supporting almost 74 million subscribers. The cable industry is still dominated by

analogue connections (PWC, 2012). Digital cable TV is also gaining popularity (Changrani, 2011). Digital cable subscribers reached more than 5 million in 2012. But the growth is limited because it requires large upfront investments in infrastructure (FICCI & KPMG, 2012). Therefore, 90% of the digital market in India is DTH based and only 10% by cable (Srinivasan, 2011).

DTH subscriber base has expanded from 0.75 million in 2005 to more than 30 million in 2011. DTH is expected to cross the 50 million subscribers mark and will be bigger than both North America and Western Europe by 2014. IPTV also has constraints like digital cable in terms of last mile connectivity. The technology is promising due to its superior quality and interactive services but the reach is limited to households having broadband. Both capital and operating costs are higher for IPTV players (FICCI & KPMG, 2012).Though broadband connectivity and the users have increased, the speed is still not up to the level. IPTV connections provided by government organizations such as BSNL&MTNL seem to be growing. However, there are less than one million IPTV users, which are negligible. Now, with the arrival of 3G, some players have started to offer mobile TV. Though the tariff plans seem attractive, bandwidth remains an issue. TV content requires larger bandwidth than normal data services (PWC, 2012).

Service providers are trying to offer triple play services in India to grow their fixed line business, increase the ARPU of broadband and heading towards convergence (Shariff, 2008). MTNL was launched in 2007 and BSNL has recently joined. Other private players are planning to enter. Many technologists believe that as triple-play mandates a unified infrastructure to support a range of services, it represents the next step in convergence getting high attention from telecommunication companies (Bahri, 2009). But the triple-play services are not expanded commercially in India.

## 3 MOBILE PHONE & INTERNET USAGE IN INDIA

India has the fastest growing telecom network. India's public sector BSNL is the 7th largest telecom company in the world. India is expected to overtake China to become the world's largest mobile market this year, 2013. (TSI, 2011).

Mobile phone subscribers count for 906.6 million (73%) of the total population now and 699 million active users and it is increasing 20 million/month. Among the subscriptions 70.6 million (6%) have 3G subscriptions (Mobithinking, 2013). Internet penetration in India reaches about 150 million and out of that 50 million is through mobile phones (SandeepAggarwal, 2013). 3G mobiles and services are going cheaper day by day. Almost every major web site like Facebook, Twitter, Orkut and Gmail has got their mobile versions, so that there is easy mobile internet access. WordPress, Blogger have also come out with numerous plugins to make them mobile friendly (Kartik, 2011). India will add 30 million new Internet users in 2013 reaching a total of 180 million. This implies a 20% growth in Internet users. An Internet user in India on average is spending 13 hour per week and this number will likely reach 16 hours per week. The incremental time spent online will largely be spent on social media, photo/video sharing, E-Commerce, and utilities/banking/bill payments. Mobile Internet penetration will go up from 6% to 10% and it could double at 100 million estimated by end of 2013. So far India's Internet usage is heavily oriented towards male gender and for work and educational establishments. In 2012 E-Commerce reached $550 million in gross revenue and it is expected to touch $900 million in gross revenue by the end of 2013. India Internet advertising generated $300 million in revenue in 2012 and can double in 2013 to reach $600 million (SandeepAggarwal, 2013).

According to a study from Nokia in collaboration with Cornell University, the Indian Smartphone users prefer business-focused apps such as e-mail and expense managers. 77% of them use approximately 30 apps. Female are active in social networking apps with 43% using this apps. Social networking apps got top followed by music, business, utilities and games. 18-24 age groups are pointed out to obtain and use social networking apps. 31% of people use apps while they lounge at home whereas 29% prefer them on the go. 48% smartphone owners use these apps throughout the day and 22% like to log in and out two to three times on a week. 58% refer they select applications based on their beneficial values whereas 48% liked staying in tune with changing times (Nokia, 2011).

Nielsen &Informate Mobile Intelligence reveals that smart phone users spend more time on the Internet than voice calls and SMS. In average users spend 2.30 hour and 72% of that time goes into gaming, entertainment and Internet, only 28% goes to voice calls and SMS. Younger's preferred browsing while. 31+ year olds spend more time on classic phone related tasks (Vadlamani, 2011).

Considering TV adoption, India has high penetration of TV sets. A large numbers of people are already using the latest media and communication tools. Therefore, some TV operators are already integrating some partial type of interactive features on their channels and programs.

In this context, there is a need to study the people's expectations for ITV. It will help to know the people's prospects and their interests. For that a study was carried to know the expectations of the viewers and their opinions towards ITV.

The specific goals of this study include: i) to understand the uses and behaviour towards TV and ITV ii) to collect the expectations towards ITV and Social iTV and; iii) to pave the way to the identification of guidelines on how to develop iTV and specially SiTV applications in India; iv) To know the operators and broadcasters stand about the SiTV.

## 4 METHODOLOGY

To gather information on the expectations of Indian population towards Interactive Television a two stages research was conducted.

First, an online survey was conducted through a structured questionnaire targeted at media professionals and students, during the months of November and December 2011. The sample of the surveyed population included mainly media students, academics and media professionals in a total of 200 valid respondents. The decision on this specific target audience was based on the fact that they are early adopters of the new technologies and may embody the future profile of Indian tech consumers. The survey was implemented with the support of a Google spreadsheet and the URL was spread by e-mail and through social networks, namely Facebook. The questionnaire is structured in three sections including personal characterization of the respondents (gender, education level, profession, age and city), ownership of media gadgets (ownership of TV, computers, internet, fixed phone connection, mobile phones), TV and other communication media usage (TV viewing habits, activities while watching TV, TV connectivity type, service providers, operators, interactive TV usage, among others) and expectations for ITV (interest in getting ITV services, interest in social TV related uses and features like sharing program recommendations and comments, the willingness to pay for ITV services, among others).

Two hundred respondents from various cities across India answered the survey. Incomplete questionnaires were removed from the list and 153 were considered valid and used for data analysis. The data gathered, both quantitative and qualitative, was coded in the SPSS software. Different statistical treatment including comparative analysis and chi-square tests was done. The results of the survey are presented in the following sections.

In the second stage of the research, targeted at getting a deeper understanding of the willingness of Indian media professionals and consumers, a demonstration followed by an interview was carried. Users were presented with a Social Interactive TV application called “WeOnTV”. The demonstration was carried to some of the respondents and also to some executives of the different TV operators and channels in southern part in India. Their opinion was collected through in-depth interview. These results are also presented in this paper.

## 5 RESULTS AND DISCUSSION

### 5.1 PERSONAL CHARACTERIZATION

As referred, the research gathered a total of 153 valid respondents being 97 (63.4%) male and 56 (36.6%) female from the cities of Chennai, New Delhi, Hyderabad, Bangalore and Madurai.

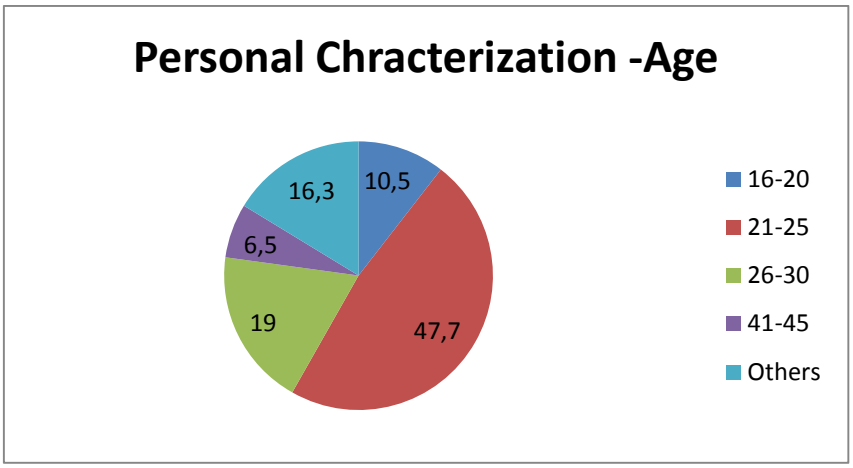


*Figure 1.Age Group of Respondents*

In this study various age groups of respondents participated from 16 to 70 years. Among the respondents the 21-25 age group is the largest one with 73 respondents (47.7%) followed by 26-30 age group with 29 (19.0%), 16-20 with 16 (10.5%) and the 41-45 age group with 10 (6.5%). All other age groups have negligible figures. The respondents have different level of education from secondary education to Ph.D. 77 Masters (50.3%); Bachelors 33 (21.6%); M.Phil. holders 26 (17.0%) and Ph.D. holders 12 (7.8%). Among the respondents students count for 41 (26.8%), followed by the media professionals like designers, web developers and IT technicians, 34 (22.2%), Professor/Teachers 22 (14.4%), Management professionals 25 (16.3%), Journalists 18 (11.8%) and engineers 10 (6.5%).

### 5.2 Ownership of Media Gadgets

The possession of gadgets may differ according to the needs, availability and spending capacity. A major part of the respondents (57.5%) have cable connection followed by DTH (42.5%). No one referred having IPTV as this technology is just starting in India.

The data shows that in India the TV connections are shared by Airtel, BSNL, DD, TATA SKY, Reliance and thousands of local cable operators. Regarding the ownership of gadgets, most of the respondents have mobile phones (91%), Internet access (89%) and fixed telephone (64%). TV and communication services are generally interrelated. Indians are not able to get more services from one provider; they are depending on many providers for different media and communication services due to the separate business models.

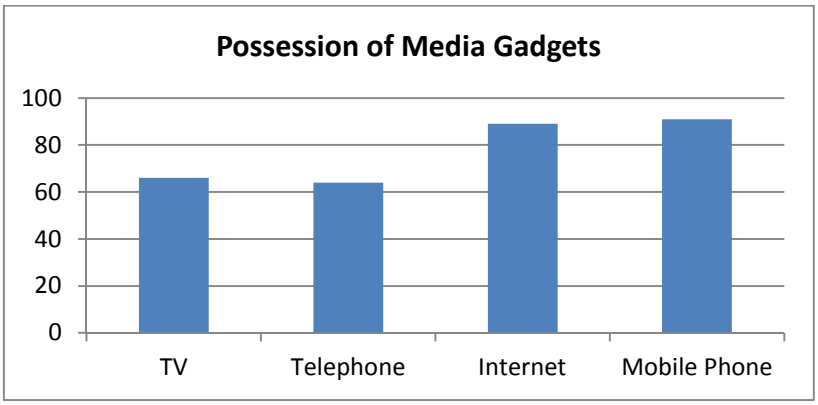


***Figure 2. Possession of Media Gadgets***

Increasingly houses have more than one TV set. But in India most of the houses still have only one TV set (66%), 1/3 of the houses have 2 TV sets and a minimum number of houses (3.9%) have 3 TV sets. Regarding computer ownership, 62.1% of the households have only one computer, 24.2% have 2 computers; 4.6houses have 3 computers and 2% houses have more than 3 computers.

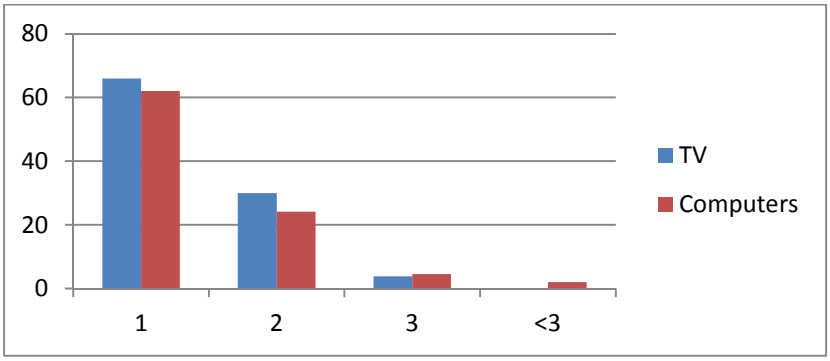


***Figure 3. Number of TV and Computers per House***

Watching TV is not only done through the TV set as many are using computers and mobile phones to watch it. Respondents are using different gadgets for TV viewing, they mostly use the TV set (97%), 15% watch on computer and a minimum 3% in mobile phones.

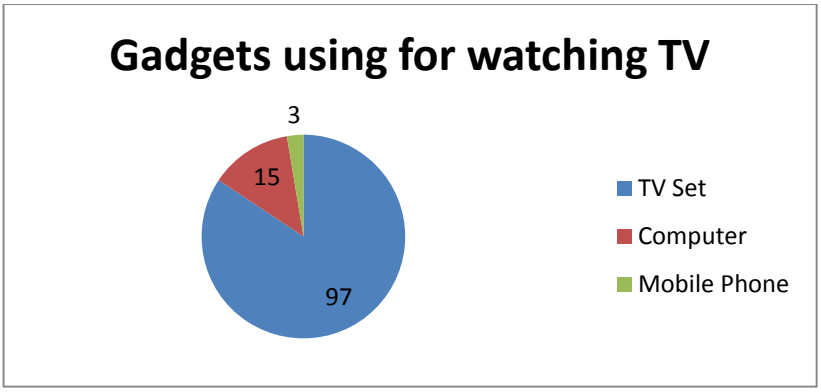


***Figure 4. Gadgets Used for Watching TV***

### 5.3 TELEVISION VIEWING HABITS

To better understand the TV viewing habits, some dimensions were observed. Considering the time spent watching TV, a major group (42%) expressed watching TV 1 to 2 hours a day, 26% watch less than one hour, 24% watch 3 to 4 hours and 9% watch more than 5 hours a day. Considering the companion while watching TV, the majority of the respondents (73.2%) do it with others. From those who watch TV with others, a majority is doing it with their family members (83.0%), followed by friends (15.2%), colleagues and other people (1.8%).

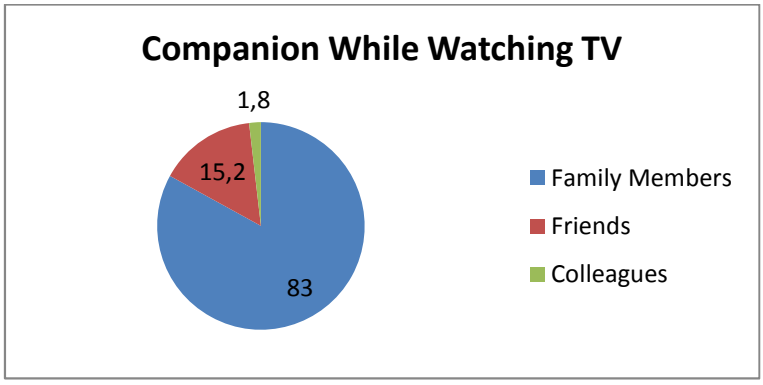


***Figure 5. With whom respondents watch TV.***

Considering complementary activities while watching TV, most viewers say they are doing other activities (79.7%). It includes talking on the phone 44%, working at the computer 38%, reading 27%, chatting online 23% and 47% doing some other household activities.

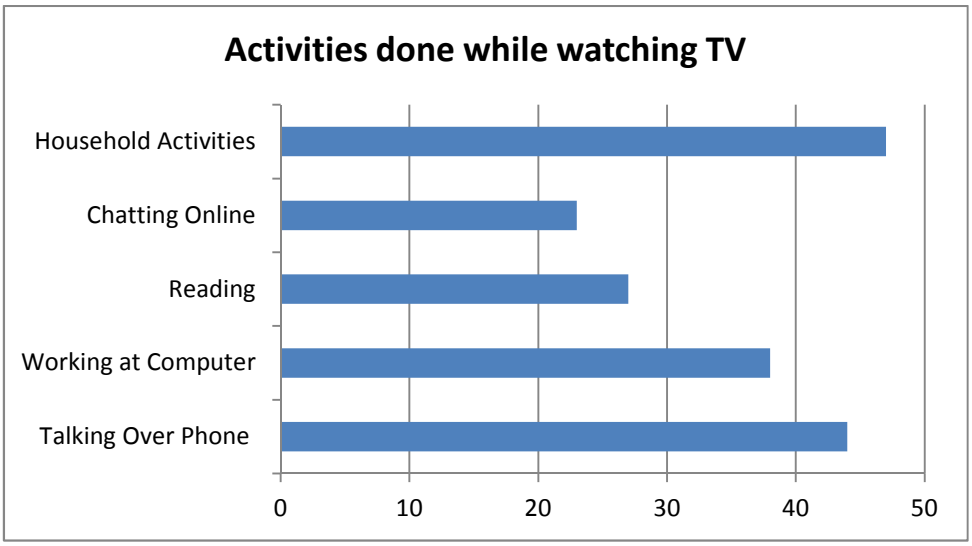


*Figure 6. Other activities done while watching TV*

Personal recommendation to family members, friends and colleagues are one of the most important and effective marketing techniques for any kind of services/products. Doing that for promoting TV channels and programs is especially effective. With concerns of social behaviors, about 2/3 of the respondents usually recommend programs/shows to others. They mainly do it in three different time slots, including while the program/show is broadcasted, after the program/show and in the following days. These recommendations are mostly done during the program followed by after the program and in the following days.

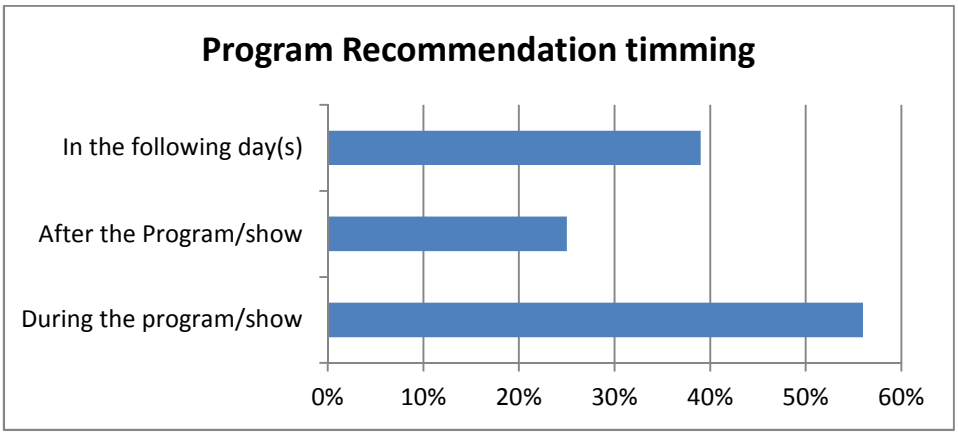


*Figure 7.WhenProgram Recommendations are done*

To send the recommendations different methods and gadgets are used. Indian respondents are mostly using SMS 61%, followed by phone 48%, in person 44%, through social networks 26%, and finally email 6%.

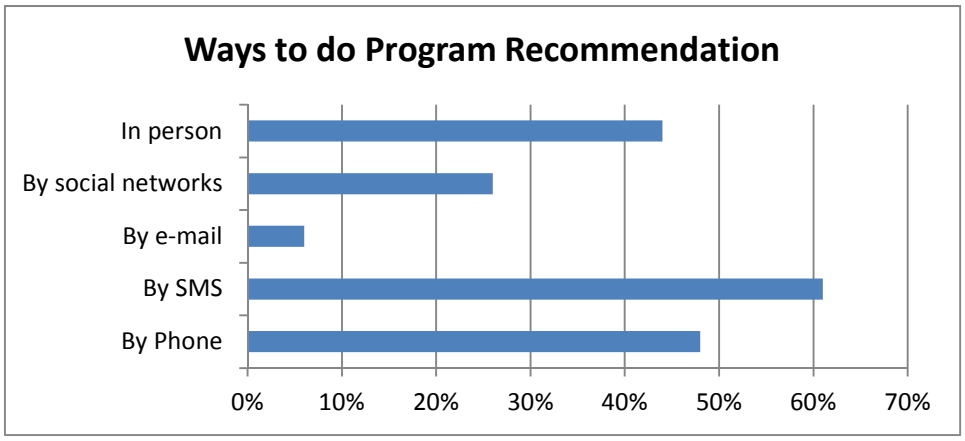


***Figure 8. Ways to do Program Recommendations***

People have the ability to choose from a wide diversity of programs and shows on TV. They are watching various programs according to their interest, mood, need, availability, etc. Indian people mostly watch movies (71%), followed by entertainment shows (61%), news (61%), music shows (59%), sports (38%), travel (26%), arts (20%), series (17%) and other programs.

Providing feedback about TV shows is a common behavior since the inception of the mass media and communication. The ways to provide that feedback is changing according to the technology availability and literacy level of the audience. Indians are active in providing feedback to TV shows with 20.3% doing it. In the Indian market many TV channels and operators include shopping related shows. This survey reveals that 23.5% of respondents are viewing these shows. But only a small percentage is buying products/ services.

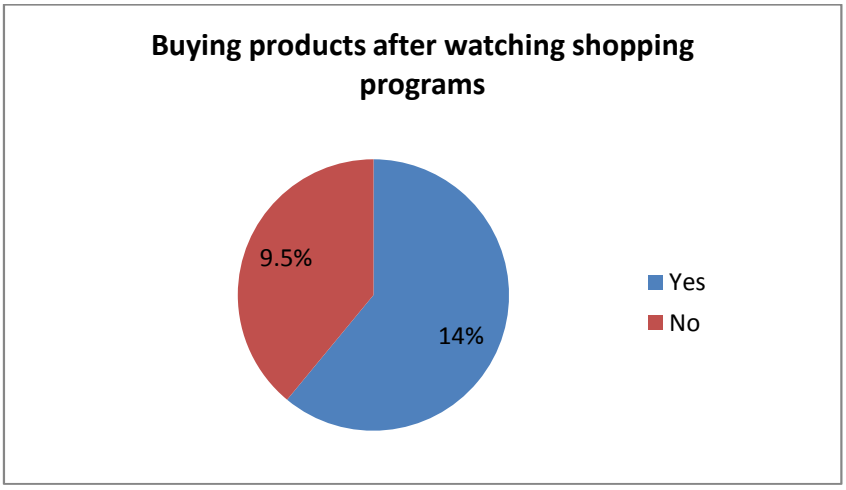


***Figure 9.Buying after Watching Shopping Programs***

Considering interactive (TV) features, many channels and operators are now providing some types of interactive programs. This study shows that about 26% of respondents are getting interactive programs and services with their providers. From this, Interactive games got the first position with 52% followed by TV shows information with 42%, news with 36%, cookery related interactive applications with 22% and E-Learning applications with 15%.

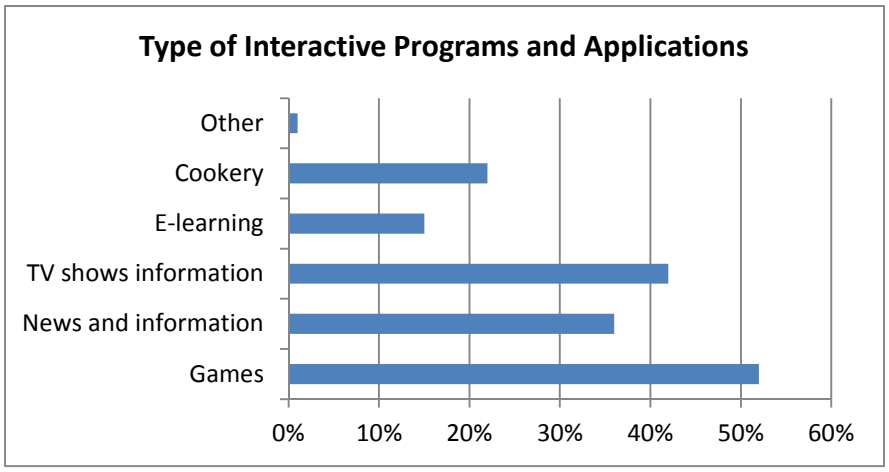


*Figure 10. Type of Interactive Programs Watched*

### 5.4 EXPECTATIONS FOR ITV

Although 26% of Indian refer having access to interactive programs, this survey reveals that about 3/4 of respondents (74%) are interested in having more interactive services in their TV. These could support communication, sharing content and recommendations, ordering products/services, interacting with social networks or getting additional information about the shows. The final section of the survey gathered the users' expectations and interests about these features. Considering features related with supporting communication with family members, friends and relatives through the TV, about 50% of respondents point that are most interested in this feature. Recommending programs/channels with others and making comments are strongly highlighted by 26% of the respondents. Participatory TV shows and contests are having more audience, but still they have not attained complete interactivity. About 40% prefer to be most interested in interacting with the shows and contests through iTV. Finally, 10% refer to be most interested in having interactive shopping applications. Considering applications for interacting with social networks, some more significant data appears. About 38% of respondents are most interested in having access to social networks through the TV. Finally, 28% of respondents are most interested in having additional information about the shows, enhanced information.

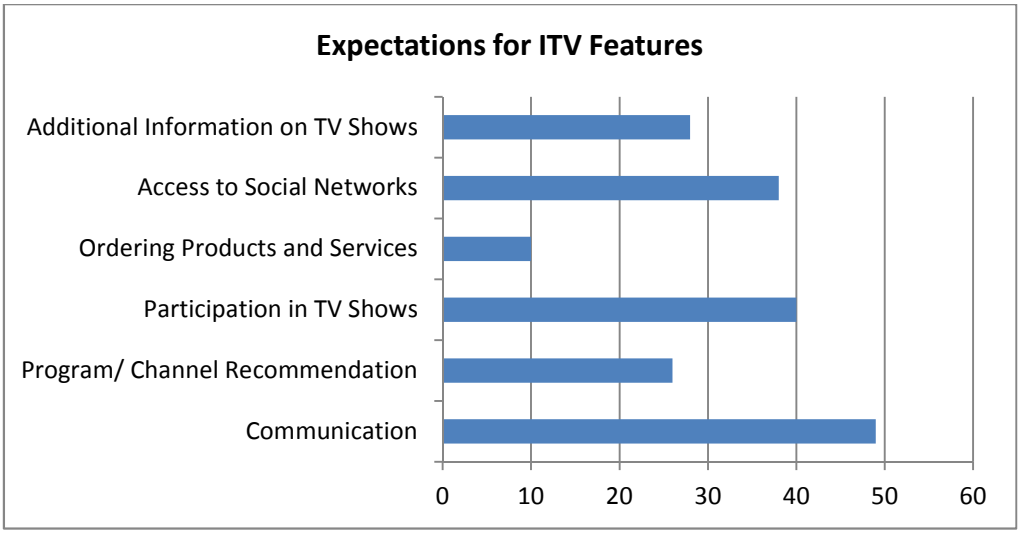


*Figure 11. Expectations for ITV Features*

TV viewing traditionally is a free activity. But, pay TV services are now emerging. Providing all these interactive features may carry some costs so the users were asked to say if they would pay for these features. 36% express their willingness to pay for it.

### 5.5 USERS EXPERIENCE WITH THE WEONTV APPLICATION

One fourth of the respondents who participated in the survey were chosen for the second phase of the research. This phase included a demonstration of the WeOnTV prototype and a feedback survey. WeOnTV is a Social TV application for supporting communication around TV content. The application was developed on Portugal's popular IPTV staging platform "MEO".It relies in the integration of Instant Messaging (IM) features on television, compatible with a popular public IM service. Along with IM features WeOnTV allows users to know what others are viewing, to make channel recommendations or chat in multiple formats(Abreu et al., 2009). The prototype demonstration video was shown to 40 users and their opinions were collected through a structured questionnaire. The results and their opinions are presented to understand in the following section.

About 40 respondents (56% male and 46% female) watched the demonstration and provided their feedback questionnaire. Among them, <25 years age group is the most represented (74%) followed by 26-35 year age group (23%). Most of the respondents are students studying master degree courses (82%) followed by bachelor (10%) and a minimum number doing Ph.D. research. They live in Chennai city and nearby towns.

They are mostly aware about SITV applications (67%). But some of them misunderstand SITV with web based social TV platforms like GoogleTV.

Regarding the demonstration of the WeOnTV application, everybody agreed that the application is understandable and more than 50% of them said that the navigation of the application is excellent and 38% said it was good. About the features of the application 96% of respondents said that it is excellent for chatting followed by 90% of them saying that is good for group discussions and 90% of them responded that it is useful for doing channel & program recommendations, 88% of them said that it is useful for program participation, and 85% of respondents said that it is useful for engaging the viewers in social activities.

A majority (62%) of the respondents are most interested is installing and using an application like WeOnTV or other SITV applications and 31% revealed to be somewhat interested. Most of the respondents (84%) said that this SITV application could support them to socialize in their day to day life.

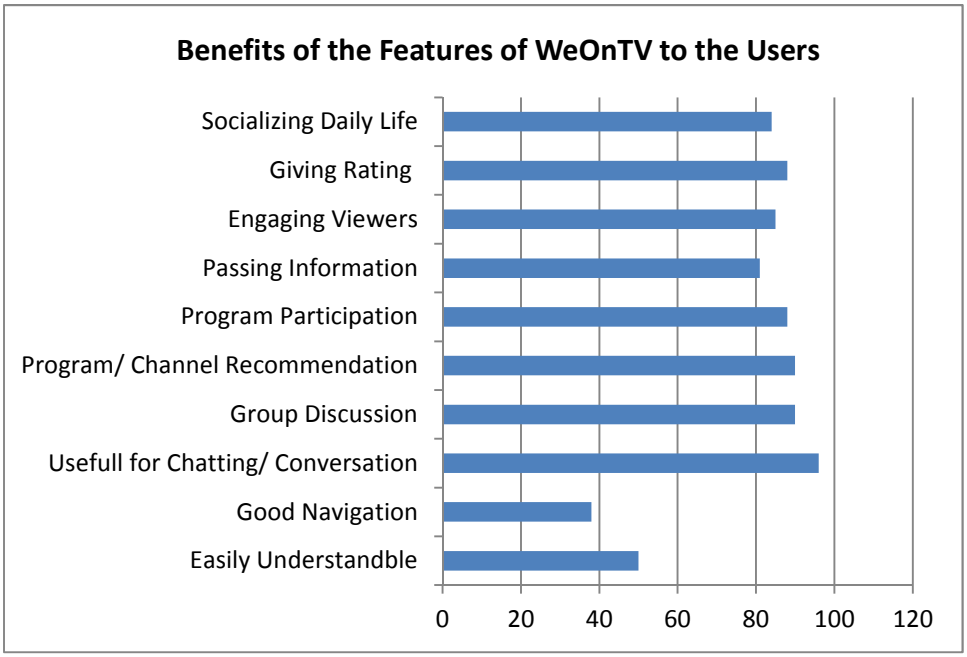


***Figure 12. Benefits of the Features of WeOnTVto the Users***

SITV and its applications is a new field for the Indian users. They are very excited about the concept but the same time they disclose some other constraints about the same. Some of them provided some negative opinions about SITV application. According to them, it's good, but it is complicated. Some users worried that, "we usually watch TV for relaxation; if interaction comes, it will affect our relaxation". Some other users said, "If we add our friends' means, it's more or less like

social networking sites only, not a TV. We are not interested in sociability in TV because interacting with friends and watching TV will spoil the full satisfaction of TV viewing". A user argued that, for chatting and sharing we have several other media gadgets, why should we use TV screen? Another user pointed that, "people who will use this will definitely get addicted to it". According to few young users, we are not able to get these applications from our operators. First of all we are using bigger TV screen for seeing larger images. But this application decrease the screen size, hence it affects the TV viewing. Therefore we use mobile phones for chatting and communicating.

### 5.6 TV Operators and Channel executives' perspectives about SITV

To know the industry's needs and their expectations, a demonstration of the WeOnTV prototype application was also presented to the executives of the TV channels and Operators. After the demonstration an in-depth interview was also conducted. But most of the company executives revealed to be very reluctant to provide answers, therefore, only a few agreed to provide the interview.

The total numbers of responses was11 from TV Channels and Multi System Operators (distributors) from the southern India (state of Tamil Nadu, Karnataka and Andhra Pradesh). The respondents have different management positions like Managing Directors, Chief Operating Officer, Executive Officers and Marketing Managers. More than half of executives are in the 36-45 age group, 27%are in the 26-35 age group, remaining are above 46 years. Most of the executives' have a master's degree.

Most of the executives (82%) are aware and know about SITV applications. 70% of executives said that their companies are providing some kind of interactive programs like games, news, TV information shows, cookery and e-learning and they are ready to deploy new innovations in this sector. 89% said that they have planned to develop and introduce SITV applications in a time span of 6 months to 3 years. 100% of executives firmly stated that SITV applications will help the TV broadcasting and distribution industry as well as viewers in terms of getting program rating, receiving feedback, engaging viewers or marketing products and services. They agreed SITV applications will totally enhance TV viewing. Other advantages that were referred included promoting TV programs, overcoming the competitors, attracting more viewers, and marketing, getting more revenue and increasing the interaction models.

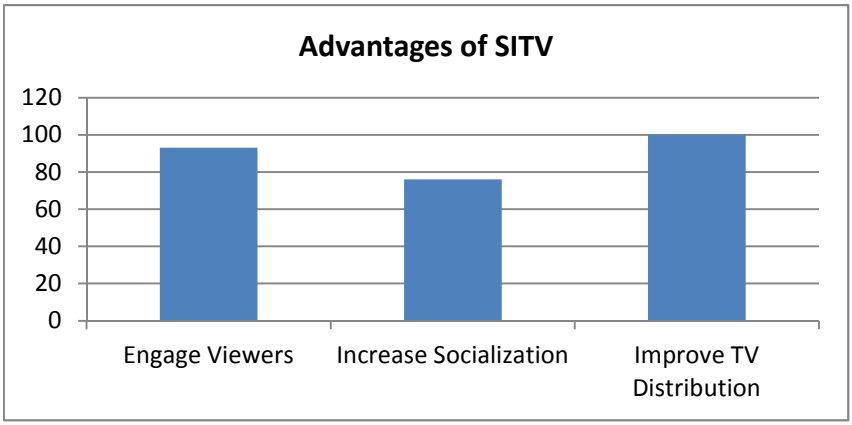


***Figure 13. Advantages of SITV***

Regarding the WeOnTV application all the executives (100%) said it is instantly understandable. WeOnTV's navigation is excellent. The application features like chatting and conversation, group discussions, program participation, channel and program recommendation and passing information are very good. They all agreed that it is a very good application for engaging viewers in social contexts. They expressed to be most interested in deploying this kind of SITV applications.

They also said that this type of applications is good for promoting programs and enhancing TV viewing. But they referred that legal and technical difficulties could compromise the implementation of such an application. According to the operators, they are willing to exploit these kinds of applications but many larger distribution companies and channels are reluctant to include this type of application. Also, Indian government broadcasting norms and cable acts can limit the use of this kind of applications. But in the near future the regulations may be amended to adopt innovative technologies and applications to help developing the TV broadcasting and viewing activities.

## 6 SUMMARY & CONCLUSIONS

This research has found that most of the Indians are active TV viewers. They spend a lot of time watching TV and are waiting for innovative services. The viewers expressed their interest for interactive features. This allows predicting a relevant potential for ITV services in India. The interactive applications available nowadays in India are mainly offline applications, but they provide an important experience that could be boosted with true iTV applications. The SITV application demonstration among the users and operators exposed that there is a warm welcome for such type of applications. Users experienced and enjoyed the SITV demonstration and understood the benefits of it. But at the same time, they realized the deficits and constraints of the new technology. They are worried about the Indian broadcasting laws and regulations not favouring the accommodation of new technologies. Nevertheless, we can expect major developments in the following years for SITV in India.

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