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EXPECTATIONS AND USAGE PATTERN OF MOBILE PHONE SUBSCRIBERS AND ROLE OF SERVICE PROVIDERS: A COMPARATIVE STUDY OF RURAL AND URBAN INDIA

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Abstract

The paper firstly compares the current usage pattern of mobile phone services of urban and rural subscribers and their desired pattern of mobile phone services in future. Secondly, it compares the level of activities that are being adopted by the mobile phone service providers in rural and urban areas and the subscribers' desired level of activities to be adopted by their mobile phone service providers in future in rural and urban areas. The primary study was based on 800 respondents from the four states of India viz. Gujarat, Punjab, Tamil Nadu and West Bengal that covered the rural and urban mobile phone subscribers. A non-parametric technique Mann-Whitney U test was applied to examine the significant differences between the means of urban and rural mobile phone subscribers with respect to their mobile phone services. The results revealed that apart from work related and gaming services, significant differences emerged between the rural and urban subscribers with respect to mobile phone services usage viz. social calls, text messages, mobile internet, agriculture/commodity prices updates, application downloads, payment through mobile phone services, weather updates and social chatting. The significant differences also emerged between the two groups with respect to their desired level of usage pattern of mobile services except text messages and mobile internet. The usage for social calling, gaming, agriculture/commodity prices updates and weather updates was found to be higher in rural areas than their urban counterparts. Moreover, the results showed that the desired level of usage pattern of mobile phone services in rural areas were found to be higher in all mobile phone services than that of their urban counterparts. The study also showed that statistical significant differences emerged between the two groups with respect to current and desired level of activities carried out by their services providers. Except for pamphlets distribution in regional

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language, the service providers were found to be active more in rural areas than urban areas. Urban subscribers' desired distribution of pamphlets in regional language to be higher than rural areas and in other activities, rural subscribers desired more activities than in urban areas. The study makes an empirically rigorous contribution to a relatively under researched aspect of comparing the means of urban and rural subscribers with respect to their current usage pattern, desired usage pattern, current activities carried out by service providers and desired activities of mobile phone service providers. The author recommends that private players and government agencies should take into their consideration the results of the study for diffusion of mobile phone services for reducing the gap between urban and rural tele-density in India.

Keywords: Urban-rural areas comparison, Current and desired usage, Activities of mobile phone service providers.

1. Introduction

The mobile phones that were considered to be the status symbol have become the necessity of the life these days. The phenomenal spurt in mobile telephony growth has made Indian telecom industry's environment, vibrant, competitive, innovative and globalised. The rapid change and advancements in the technology have led the market in a situation where the fight for increasing subscriber base has become intense (Suoranta, 2003). The situation in urban areas about mobile services adoption has been surprising where people have crossed the mark of carrying one connection with them. The urban people have become totally dependent on their mobile gadgets and connected with the people through their mobile services. Among the new services offered is the emergence of fourth generation (4G) mobile services with high speed and compatibility with new advanced mobile phone technologies. This has created a complex situation of cut-throat competition for the mobile service providers to increase their subscriber base, in urban areas and has to offer, either an attractive bundle of value added services for attracting the subscribers of other service providers or the subscribers may opt for second or third connection. However, in rural areas the situation is quite different. The growth of the subscriber base in rural areas has not been as much as the growth in the urban areas. Most of the people don't have access to mobile telephony due to the constraints of availability, affordability, acceptability and awareness that are associated with rural areas.

Many attempts have been made by the Government of India and various organisations to revitalize the rural sector through its various projects like creation of Universal Service Obligation Fund (USO), Bharat Nirman by providing Village Panchayat Phone (VPT),

MS Swaminathan Research Foundation's Village Information Shop, Gyandoot, e-choupal, Technology and Action for Rural Development project TARAhaat, Sustainable Access in Rural India (SARI) Network, Indian Space Research Organisation's (ISRO) Village Resource Centre (VRC) project etc. With the intervention of strict policies and government agencies directives also made compulsory for the reluctant private players to provide the services in rural areas. Despite all these measures, the slow pace of increasing rural teledensity and a widening gap between rural teledensity and urban teledensity (*see* Table 1) has become a serious concern for the government and policy makers.

Table 1: Rural-Urban Tele-density

Tele-density Year	2010	2011	2012	2013	2014	2015	2016	2017
Urban Tele-density	112.03	150.06	162.53	140.67	139.86	143.08	148.73	166.71
Rural Tele-density	23.08	32.75	38.33	40.23	43.27	47.78	50.88	56.47

Source: Compiled from Telecom Regulatory Authority of India reports

To enter into rural markets having prior knowledge of such constraints, the first and foremost task for adoption of technology is to spread the knowledge and information how to operate it (Sahu, 2006). A well designed innovation would be perceived useless, if it is not adopted or not able to maximise the adoption rate (Chigona and Licker, 2008). Since the availability of services in the rural areas may not result in the adoption (Hollifield and Donnermeyer, 2003; Tookey et al., 2006; Ramirez, 2007), the mobile phone operators are required not only to provide the mobile phone services to rural community but also develop a mechanism for the adoption of the services such as how can rural community make effective use of mobile phone services and dynamically inculcate it into their lives? Nevertheless, usability, experience of urban users can never be placed at par with rural users as usability varies with skills, knowledge and experience (Dillon, 2001; Han et al., 2001).

The foremost reason for carrying out the comparative study of urban and rural subscribers is to delve deep into the phenomenon of the widening gap of teledensity between these two areas. Despite of providing the similar service to both the areas, the increasing gap between the teledensity has surely been on the basis of peculiar characteristics associated with consumers affected by the regional influences. The present study is an attempt to highlights the differences in usage pattern of mobile phone services

of the subscribers of these two areas and their expectations from service providers.

2. Review of Literature

A wide range of mobile services exists in the market, that fulfil different type of needs of the subscribers (Anckar and D'Incau, 2002; Bouwman et al., 2008). In the same way, many authors have attempted to classify mobile services for different purposes and using different criteria. Pura and Heinonen (2007) identified four dimensions of mobile services viz. type of consumption (hedonic vs. utilitarian use), temporal and spatial context, social settings (social environment and social interaction) and relationship between customer and service provider to assess potential customer reactions to specific mobile services. Velez and Corriea (2002) categorised the mobile broadband services and applications on the basis of flow of traffic produced such as interactive/conversational, interactive/messaging, interactive/retrieval, distributed/broadcast, distributed/cyclical. Holma et al. (2007) classified UTMS services to key five categories as person-to-person circuit switched services; person-to-person packet switched services, content-to-person services, business connectivity, and location services and then divided these categories into twelve subcategories. Smura et al. (2009) decomposed the mobile services into four technical categories (devices, applications, networks, and content). While a evolving literature has pointed out the categorisation of mobile services and to introduce more value added elements, the subscribers actual reason for adopting and their intentions to use mobile services remains unclear (Urbaczewski et al., 2002; Pedersen et al., 2002).

There are well-designed behavioural models examining the adoption of technology such as the Theory of Planned Behaviour (TPB) (Ajzen and Fishbein, 1980) and the Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989; Mathieson, 1991). However, the models and its extensions deal with the use of technology. The intentions to use mobile services particularly what kind of services appeal to consumer has not been explored much in the literature. Jain and Hundal (2010) studied the intentions of subscribers using mobile services in rural Punjab where the mean differences were found to be statistically significant indicating that rural subscribers desire to use mobile services were found to be higher than that of their current usage, and they desired more support from their service providers than they were being provided. Kesti et al. (2003) studied perceptions of m-commerce subscribers in three dimensions such as personal communication, guidance services and flyers where it was found that significant differences exist while examining low interest and high interest users, where guidance services were observed as the most important service followed by mobile

advertisements and communication services. Watkins et al. (2012) compared two studies conducted at urban and rural areas of India suggesting that low level of income and digital literacy, and certain social structures and cultural norms may further restrain estimating adoption, but didn't negate the range of new possibilities of further adoption provided such constraints are tackled with.

3. Objectives of the Study

Though the literature covered the aspects of mobile services adoption and a few studies about intentions to use mobile services, but there is hardly any study comparing the rural and urban subscribers to know the differences in their intentions to use mobile services. The present study is an attempt to fill the research gap, firstly, by comparing the urban and rural subscribers with respect to their usage pattern of mobile phone services and their desire to use mobile services; and secondly, the current activities of service providers being carried out and subscribers expectations from mobile service providers.

4. Research Methodology

The present study is primarily based on primary data collected from 800 respondents from rural and urban subscribers of mobile phone services in equal proportion. It is based on the consumers residing in the four states of India viz. Punjab (North), Gujarat (West), West Bengal (East) and Tamil Nadu (South) covering the four parts of the India having the most densely populated networks for wireless telephony with the highest wireless tele-density in their regions in 2012. There were practical problems in contacting relatively a large number of population having different regional languages such as Punjabi, Gujarati, Bengali and Tamil languages. Therefore, with the help of enumerators, a sample of 800 respondents from these four states was taken covering rural and urban areas of the states. Accordingly, each state included 100 respondents from urban areas and 100 respondents from rural areas. The urban areas have been selected as the capital of the State concerned and the rural areas has been selected on the basis of district selection, block selection and then village selection. In the survey, one subscriber from the family was nominated by the family for the survey responses. However, the opinion of family members was also taken into consideration, but the response of the nominated subscribers who answered the questions of the schedule was restricted to him only. The usage pattern of mobile phone services (viz. work related calls, social calls, text messages, gaming, mobile internet, agriculture/commodity prices updates, application downloads, payment through mobile phone services, weather updates and social chatting)

and service providers activities (viz. pamphlets distribution in regional language, visit of representative, training program and customer care support) have been adapted from *Jain (2013)* and measured on 0 to 5 levels of rating, i.e. 0 for never use, 1 for rarely: about once in a month, 2 for occasionally: about twice in a month, 3 for sometimes: about once in a week, 4 for often: about once in a day, 5 for constantly: several times in a day by using Mann-Whitney U test statistics, as the data are not normal, to analyse the hypotheses of no significant differences exists with respect to mean of respective mobile services among the subscribers of urban and rural areas.

5. Analysis and Interpretation

5.1 Comparison of current usage of mobile phone services by urban and rural subscribers

The analysis of no significant differences exists between the means of urban and rural subscribers in the current level of usage of mobile phone services reveals that, except work related calls and gaming services, all the null hypotheses are rejected ($p<.01$). It means that the rural and urban subscribers are using mobile phone services for their work related calls and gaming services equally (*see* Table 2). There were no significant differences in the usage pattern of work related calls and gaming services between rural and urban subscribers. However, in case of social calling, rural subscribers were using more the mobile services for social calling than their urban counterpart. Since usage of text messages require expertise in writing, urban subscriber were found to be using text messages more than their rural counterparts.

As far as the mobile internet is concerned, the null hypothesis was rejected and it revealed that there was a significant difference between the means of urban and rural subscribers with respect to mobile internet usage. However, urban subscribers were found to be using mobile internet more than their rural counterpart. Complexity may be the reason here that their usage level is quite low than their urban counterpart.

Using mobile phone services for agricultural/commodity updates and weather updates has also been found differentiating urban and rural subscribers' usage level significantly. The rural subscribers were found using agricultural/commodity prices and weather updates more than that of their urban counterparts. Since, the main occupation of rural people is agriculture; these updates are quite useful for them in knowing the information related to their products.

Moreover, the advance new mobile phone technology usage has also been found differentiating rural and urban subscriber's usage level significantly. The advance

services like application download, payment through mobile phone services and social chatting were found to be used more by urban subscribers than their rural counterparts. The reason behind is the expertise in operating the innovation system, whereas rural subscribers face problem in operating these new technological innovations.

Table 2: Comparison of means of current and desired level of usage of mobile phone services between rural and urban subscribers

Mobile Phone Services	Current Level of Usage					Desired Level of Usage				
	Mean Rank		Mann-Whitney U	Z value	Sig.	Mean Rank		Mann-Whitney U	Z value	Sig.
	Urban	Rural				Urban	Rural			
Work Related Calls	407.44	393.56	77223.00	1.376	.169	384.09	416.91	73436.500	3.329	.001*
Social Calls	375.47	425.54	69986.00	5.207	.000*	364.87	436.13	65747.000	6.378	.000*
Text Messages	492.22	308.78	43313.00	12.198	.000*	394.95	406.05	77781.000	1.377	.168
Gaming	398.35	402.65	79141.00	0.269	.788	299.46	501.55	39582.000	12.651	.000*
Mobile Internet	502.65	298.36	39142.00	13.183	.000*	397.91	403.09	78964.500	0.554	.579
Agriculture/ Commodity Prices Updates	282.73	518.27	32891.00	14.807	.000*	253.89	547.11	21354.500	19.989	.000*
Application Downloads	500.76	300.24	39896.50	12.892	.000*	258.59	542.41	23237.000	19.542	.000*
Payment through Mobile Phone Services	496.42	304.58	41633.50	13.715	.000*	340.42	460.58	55969.000	7.927	.000*
Weather Updates	205.44	595.56	1975.00	25.169	.000*	211.44	589.56	4377.500	24.113	.000*
Social Chatting	533.55	267.45	26779.00	16.963	.000*	370.66	430.34	68065.000	4.471	.000*

**Significant at 1 the percent level*

Source: Calculated by Author from dataset

5.2 Comparison of Desired usage of mobile phone services by urban and rural subscribers

The hypotheses of no significant difference between the means of rural and urban subscriber with respect to their desired level of usage of mobile phone services have also been examined. The results revealed that in the case of text messages and mobile internet, the null hypotheses were accepted specifying that the rural and urban subscribers' desired level of using text messages and mobile internet was same. It means that they didn't desire any changes in their desired level of usage of these mobile phone services. However in remaining cases, the null hypotheses was rejected at 01 percent level of significance, specifying that there was statistically significant difference between the

means of these two groups with respect of remaining mobile phone services.

It was found that the mean rank of work related calls, social calls, gaming, agriculture/commodity update, application download, payment through mobile phone services, application download, weather update and social chatting; were found to be higher than their urban counterpart. It specified that rural subscribers desire to use/increase their usage level of mobile phone services than their earlier usage. However, the score of desired level of usage was even higher than their current level use which confirmed that the rural subscribers are potential adopters of new mobile phone advanced services that they wish to adopt or increase its usage.

5.3 Comparison of current level of activities initiated by mobile phone service providers in rural and urban areas

The null hypotheses that there is no significant difference between the means of current level of activities initiated by mobile phone service providers in rural and urban areas with respect to pamphlet distribution in regional language, representative visits to get the people aware about the mobile phone services, special training programs or campaigns and customer care assistance have been rejected (*see* Table 3). The result revealed that all the hypotheses were rejected at ($p<.01$) level of significance specifying that there is a significant difference in activities initiated by the service providers in rural and urban areas. The result showed that service providers were distributing more pamphlets in urban areas than in rural areas. However, the rest of the three initiatives they were concentrating more on rural areas than the urban areas.

Table 3: Comparison of means of current and desired level activities initiated by mobile phone service providers in rural and urban areas

	Current Level of Usage					Desired Level of Usage				
	Mean Rank		Mann-Whitney U	Z value	Sig.	Mean Rank		Mann-Whitney U	Z value	Sig.
	Urban	Rural				Urban	Rural			
Pamphlets in regional language	506.27	294.73	37691.000	14.142	.000*	442.10	358.91	63362.000	5.781	.000*
Visit of representative	306.82	494.18	42529.000	14.504	.000*	201.36	599.64	344.000	25.893	.000*
Special training program/ Campaign	353.92	447.08	61367.000	9.377	.000*	231.19	569.81	12274.500	21.414	.000*
Customer care support	295.54	505.47	38014.000	16.423	.000*	203.63	597.38	1250.000	25.556	.000*

**Significant at 1 the percent level*

Source: Calculated by Author from dataset

5.4 Comparison of desired level of activities initiated by mobile phone service providers in rural and urban areas

The null hypotheses that there is no significant difference in a desired level of activities initiated by mobile phone service providers in rural and urban areas with respect to pamphlet distribution, representative's visits, special training campaigns and customer care assistance have been rejected. It specifies that difference emerged in the activities initiated by service providers in rural and urban areas. The results showed that urban adopters were being distributed pamphlets in their regional language higher than that of their rural counterparts and they also required more distribution of pamphlets in regional language than their rural counterparts. It was also found that the desired level of pamphlet distribution in rural areas was higher than their current level of distribution of pamphlets in regional language. It also depicted that rural people desire to more visit of representatives, special training programs or campaigns to let them aware about new mobile phone services and customer care in their rural areas than their urban counterparts. It reflected that rural people require more assistance than urban subscribers.

6. Conclusions and Implications for marketers

The study aims at examining the intention levels of urban and rural subscribers using mobile phone services by taking into consideration, firstly, their current usage pattern and their desire to use mobile phone services in the future, and secondly, the level of activities that are being practiced by the service providers and the desire of subscribers from their service providers the level of activities to be carried on. The study compared the intentions of these two areas where it has been found that the rural areas are demanding in nature in totality. The statistical differences emerged in the case of current levels of social calls, text messages, mobile internet, agricultural updates, application downloads, payment through mobile phones, weather updates and social chatting except work related calls and gaming. In case of their desire of usage pattern except text messages and mobile internet, the significant differences emerged in mobile phone service usage. It also emerged that urban subscribers were using more mobile phone services and rural people wished to use more mobile phone services in future. The reason of low usage was primarily linked to complexity as described by the villagers during the discussions with them during the survey. The findings suggest that the more the system is complex, less usage will be there. For this, it is suggested that the mobile phone services are needed to be made as simple as it can be to increase the adoption rate. Since the rural subscribers are demanding in nature, they desire to use these advance mobile phone

services. It suggests that the tremendous growth of mobile phone services can be visualized; the only effort required is to make it simple to use. The service providers will have to make communication with the mobile handset company to build devices that help the subscribers to use the complex services with its guidance.

Further, the current level and desired level of activities such as the visit of representative, special training program and customer care support were found to be more in rural areas than urban areas except pamphlets in regional language. The service providers should reduce distribution of pamphlets in urban areas and increase the pamphlet distribution in rural areas. They should increase the number of awareness programs in rural areas to get the people aware about the new advanced technology as their desire reflected the tremendous opportunities for growth in rural areas.

The study examined only the four states of India for usage pattern and the desire of mobile subscribers. It could be extended to other parts of the country with large datasets. Moreover, the study adopted the mobile phone services that are frequently used in the urban and rural areas; the number of mobile phone services could be increased to extract the reason for non-adoption of mobile phone services.

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