

Digital Media for Rural Development: A Communication Study in Remote Rural Telangana



Dr. Akanksha Shukla



National Institute of Rural Development and Panchayati Raj
Ministry of Rural Development, Government of India
Rajendranagar, Hyderabad - 500 030
Telangana, India

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Rajendranagar, Hyderabad-500030, India
nirdpr.org.in

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Author: **Dr. Akanksha Shukla**

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CONTENTS

S. No.	Particulars	Page No.
1	Chapter – 1 INTRODUCTION 1.1. Introduction 1.2. ICT 1.3. Role of ICT in Development 1.4. Digital India Initiatives 1.5. Mobile Phones and Development 1.6. Other Programmes related to ICT/Mobile use for development 1.7. Telangana Initiatives 1.8. Research Problem 1.9. Justification of the study 1.10. Objectives and Hypothesis 1.11. Selection of Villages 1.12. Methodology & Sampling 1.13. Methodology 1.14. Analytical Frame Work: Analysis and Report 1.15. Proposed Output 1.16. Utilisation of Findings 1.17. Chapterisation	1-19
2	Chapter – 2 LITERATURE REVIEW 2.1. Mobile Connectivity 2.2. ICTs and Development Goals 2.3. Initiatives in mobile studies 2.4. Different Effects of Mobile Usage 2.5. CSOs and Mobile based development Approach 2.6. Mobile & Cultural perspective (TEXTING CAPITAL) 2.7. Theoretical Frameworks of Technology & Society 2.8. Popularity Of Mobile Phones & Government Schemes 2.9. E-governance (SMART) 2.10. Telangana State Initiatives 2.11. E-Governance 2.12. MeeSeva 2.13. Methodology & Sampling	20-42

S. No.	Particulars	Page No.
3	Chapter – 3 DIGITAL MEDIA FOR RURAL DEVELOPMENT: A COMMUNICATION STUDY IN REMOTE RURAL TELANGANA 3.1. Criteria for selection 3.2. Introduction 3.3. The Concept 3.4. Data Collection 3.5. Methodology 3.6. Profile of the Sample 3.7. Data related to Mobile usage 3.8. E-Governance and Government Apps Usage 3.9. Usage of Mobile apps supported by Government 4.0. Futuristic Indicators for App usage 4.1. Summarised Data	43-87
4	Chapter – 4 CO-RELATION OF VARIABLES 4.1. Relationship with Income 4.2. Relationship with Age 4.3. Relationship with Education 4.4. Relationship with Occupation 4.5. Relationship with Gender 4.6. Relationship with mobile usage 4.7. Relationship with App usage 4.8. Conclusion	88-110
5	Chapter – 5 CONCLUSIONS & RECOMMENDATIONS 5.1. Introduction 5.2. Conclusion 5.3. Co-relating variables 5.4. Summary 5.5. Indicators from Conclusions from the study 5.6. Recommendations 5.7. Role of NIRDPR 5.8. Limitation of the study and future directions for research	111-119
6	References	120-124

ABBREVIATIONS & ACRONYMS

AI	- Artificial Intelligence
ASSOCHAM	- The Associated Chambers of Commerce and Industry of India
BHIM	- Bharat Interface for Money
COAI	- Cellular Operators Association of India
CSOs	- Civil Society Organisations
CSR	- Corporate Social Responsibility
DA	- Development Alternatives
Gbps	- Gigabits per second
GCCS	- Global Conference on Cyber Space
ICT	- Information and Communication Technology
IDI value	- ICT Development Index Value
IoT	- Internet of Things
IVRP	- Information Village Research Project
M2M	- Machine to Machine
MeitY	- Ministry of Electronics & Information Technology
MGNREGS	- Mahatma Gandhi National Rural Employment Guarantee Scheme
MSSRF	- M S Swaminathan Research Foundation
NASSCOM	- National Association of Software and Service Companies
NEFT	- National Electronic Funds Transfer
NeGD	- National e-Governance Division
NeGP	- National e-Governance Plan
NGOs	- Non-governmental Organisation
NOFN	- National Optical Fibre Network
ODK	- Open Data Kit
OFC	- Optical Fibre Cable
OSS Kiosk	- One-Stop Shop Kiosk
PDS	- Public Distribution System
RBI	- Reserve Bank of India

SBCC	- Social and Behaviour Change Communication
SCB	- Scheduled Commercial Bank
SMART	- Simple, Moral, Accountable, Responsible and Transparent
SMEs	- Small and Medium Enterprises
SMS	- Short Messaging Service
SPSS	- Statistical Package for the Social Sciences
TITA	- Telangana Information Technology Association
TRAI	- Telecom Regulatory Authority of India
UPI	- Unified Payments Interface
VDP	- Village Development President
VPTs	- Village Public Telephones

LIST OF TABLES

S. No.	Particulars	Page No.
1	Table 1.1: Rural Wireless Subscriber Base and Market Share as on 30.06.2019	2
2	Table 1.2: Service Area-wise Wireless Rural-Urban Subscriber Base	2
3	Table 2.1: Trend of Technology-wise Wireless Data Usage (in Terabyte)	6
4	Table 2.2: Break-up of Rural-Urban Internet Subscriber Base (million)	6
5	Table 2.3: Theoretical Framework	32
6	Table 3.1: The villages that are studied under this project:	43
7	Table 3.2: Criteria for Selection of GP	44
8	Table 3.3: Sample Size	50
9	Table 3.4: Profile of the Respondents	50
10	Table 3.5: Distribution of Education by Higher Qualifications	53
11	Table 3.6: Distribution of Households by Occupation	53
12	Table 3.7: Total Members in the Households	55
13	Table 3.8: Total Family Income (monthly)	55
14	Table 3.9: Distribution of Households Possessing Assets	56
15	Table 3.10: Family Monthly Expenditure	57
16	Table 3.11: No. of Respondents having Mobile	58
17	Table 3.12: Type of Mobile (among those possessing mobile)	59
18	Table 3.13: Distribution of Households according to Number of Mobile Phones They Possess	59
19	Table A, Table B & Table C	60
20	Table 3.14: Internet Data Bill	61
21	Table 3.15: Total Monthly Expenditure on Mobile Phone Bill	62
22	Table 3.16: Distribution of Households According to the Usage of Mobile	62
23	Table 3.17: Time Duration of Mobile Use Per Day	63
24	Table 3.18: Whether the Mobile is Used for Online Banking	63
25	Table 3.19: Mode of Mobile Banking Payment	64
26	Table 3.20: Type of Payments Usually Made	65
27	Table 3.21: Period of Accessing Paytm and Other Services by Mobile	65

S. No.	Particulars	Page No.
28	Table 3.22: Whether Faced Any Difficulties with regard to the Usage of Mobile	66
29	Table 3.23: The Difficulties Faced by the User	66
30	Table 3.24: Whether the Households have Trust in Digital Transaction	66
31	Table 3.25: Reasons for No Trust in Digital Transaction	67
32	Table 3.26: Awareness of MeeSeva Centre (Common Service Centre)	67
33	Table 3.27: No. of Respondents Who Visited MeeSeva Centre	68
34	Table 3.28: Purpose of Visiting the Centre	69
35	Table 3.29: Knowledge About How to Use MeeSeva App	69
36	Table 3.30: Whether the Households Use Mobile for Entertainment	70
37	Table 3.31: Mobile for Entertainment: Mostly Listen/Browse/Play	70
38	Table 3.32: Time Allocated for Entertainment Per Day	71
39	Table 3.33: Whether the Mobile Simplified the Service Accessing Process	71
40	Table 3.34: How Mobile Facilitates Getting Services from Govt/NGO	72
41	Table 3.35: Whether Used Biometric System to Access Government Benefits	73
42	Table 3.36: Application of Biometric System	73
43	Table 3.37: Finding Biometric Process Easy	74
44	Table 3.38: Difficulty in Using Biometric Access	74
45	Table 3.39: Whether Aware of Any Apps Launched by Government for Public Use	74
46	Table 3.40: Government Public Usage App- Agricultural App	75
47	Table 3.41: Government Public Usage App- Health App	75
48	Table 3.42: Government Public Usage App- Educational App	76
49	Table 3.43: Government Public Usage App- Other Apps	76
50	Table 3.44: Apps Used by Respondents	77
51	Table 3.45: Source of Information about Apps	77
52	Table 3.46: Awareness by Govt/NGO/ PRI	78
53	Table 3.47: Awareness of Agricultural Apps	78
54	Table 3.48: Using the Agricultural App in Mobile	79
55	Table 3.49: Details of Agricultural App Services	79
56	Table 3.50: Drawing Benefits from the Agricultural App Online Service	79
57	Table 3.51: Getting Benefits from Various Online Sources	80
58	Table 3.52: Not been Using (App) but Want to Start Using It	80
59	Table 3.53: Training Required to Start App Usage	81
60	Table 3.54: Wishes to Seek Type of Information Related to Agriculture	81
61	Table 3.55: Awareness of the Aarogyasri App	82
62	Table 3.56: Using Aarogyasri App	82

S. No.	Particulars	Page No.
63	Table 3.57: Aware of Other Apps/Online Services from Government	82
64	Table 3.58: Name of the Apps/Service	83
65	Table 3.59: Getting Benefits from the App or Online Service	83
66	Table 3.60: Benefits from Apps	84
67	Table 3.61: Suggestions for Improvement of the Apps/Online Services	84
68	Table 3.62: Desire to Get Awareness of Such Apps	85
69	Table 3.63: Kind of Training Preference to Learn	85
70	Table 3.64: Kind of Training Desired	86
71	Table 3.65: District-wise Comparison of Aspects & Their Significance	86
72	Table 4.1: Whether Usage of Mobile is Influenced by Family Income	88
73	Table 4.2: Whether Family Income Determines the Type of Phone Used	89
74	Table 4.3: Whether Age Influences the Type of Mobile Used	90
75	Table 4.4: Whether the Age Influences Mobile Usage	91
76	Table 4.5: Whether Education Has Any Bearing on the Usage of Mobile	92
77	Table 4.6: Whether Education Influences the Type of Mobile Used	93
78	Table 4.7: Whether Occupation Determines the Type of Mobile Used	94
79	Table 4.8: Whether Occupation could be a Factor that Determines the Usage of Mobile	95
80	Table 4.9: Respondents of Which Gender and with What Educational Background are Using Mobile Phone- Adilabad	96
81	Table 4.10: Respondents of Which Gender and with What Educational Background are Having Mobile Phone-Nalgonda	97
82	Table 4.11: Gender and Age Group-wise Ownership of Mobile in Adilabad	98
83	Table 4.12: Gender and Age group-wise Ownership of Mobile in Nalgonda	99
84	Table 4.13: Usage of Phone with Calling by Education	100
85	Table 4.14: Usage of Phone with SMS by Education	100
86	Table 4.15: Usage of Phone with WhatsApp by Education	101
87	Table 4.16: Usage of Phone with Facebook by Education	102
88	Table 4.17: Usage of Phone with YouTube by Education	102
89	Table 4.18: Usage of Phone with Online Banking by Education	103
90	Table 4.19: Usage of Phone with News Channel by Education	103
91	Table 4.20: Usage of Phone with Online Games by Education	104

S. No.	Particulars	Page No.
92	Table 4.21: Usage of Phone with Accessing Govt. Schemes by Education	104
93	Table 4.22: Usage of Phone with Accessing Education by Education	105
94	Table 4.23: Usage of Phone with Accessing Email by Education	105
95	Table 4.24: Whether used Biometric System	106
96	Table 4.25: Apps Used by the Respondents	106
97	Table 4.26: Awareness of Govt. Applications	107
98	Table 4.27: Awareness of Agriculture Applications	107
99	Table 4.28: Awareness of Health Applications	108
100	Table 4.29: Awareness of Education Applications	108
101	Table 4.30: Awareness of Other Applications	109
102	Table 4.31: Distribution of HH by Gender	109
103	Table 4.32: Number of Mobile with Individuals (Ratio)	110
104	Table 4.33: Expenditure on Number of Mobiles	110

LIST OF FIGURES

S. No.	Particulars	Page No.
1	Figure 1: Composition of Wireless Internet Subscription	7
2	Figure 2: Model of Understanding Media and Rural Development	27
3	Figure 3: du Gay's Circuit of Culture	31
4	Figure 4: Map of Telangana State with 31 Districts	43

Chapter-1

INTRODUCTION

In a land that has long judged people by caste and tribe, the smartphone is emerging as a new vehicle for self-determination.

- India Connected by Ravi Agrawal

1.1. Introduction:

The idea of digitally-oriented development is as powerful and seductive as the technology. No single technological revolution has changed the lives of current generations in the way that the Internet has¹. As we sit on the threshold of emerging technologies, Ms. Aruna Sundararajan, Secretary, Department of Telecommunications, has observed in the Annual Report of the COAI 2018-19 that *“like 5G, IoT, AI, M2M, ease of doing business, sharing of spectrum, trading and harmonization, India has become the highest data consuming nation of the world with consumption at 1.3 Billion GB per month”*. The optic fibre network, which has been laid for 14 lakh km in 2018, has connected over one lakh Panchayats (COAI Report, 2018). The ambition is to provide 10 Gbps broadband connectivity in all Gram Panchayats, 10 million public Wi-Fi hotspots and 4 million jobs in the telecom sector. The report further details that there is a 54% increase in the number of 4G smartphone devices in India. Mobile broadband penetration is recorded at 47% of the population.

The Telecomm Report 2018-19 concludes that the sector has witnessed exponential growth over the last few years which was due to many factors such as affordable tariffs, wider service availability, roll out of new facilities and services such as Mobile Number Portability (MNP), 3G and 4G, evolving consumption patterns of subscribers, and conducive regulatory environment. As per the TRAI subscription report 2019, there are 527 million rural subscribers in India as of February 2019. Total Wireless Subscribers are 1,165.46 million (urban subscribers-657.27 million & rural subscribers - 508.19 million). The Internet subscriber base in the country is 665.31 million out of which rural internet subscribers are 238.26 million. This means that out of 100 population, internet subscription in rural areas is 26.57 as against the urban populace of 101.63. The report

also elaborates that fixed line subscription is declining while wireless subscriptions are increasing. Along with this, there is a clear trend of decline in Village Public Telephones (VPTs). Finally, there is a clear trend indicating increased usage of internet data in rural areas. The table below from the report shows the wireless rural subscriber base.

Table 1.1: Rural Wireless Subscriber Base and Market Share as on 30.06.2019

Service Provider	Total no. of subscribers (in millions)	No. of rural subscribers (in millions)	Percentage of rural subscribers	Market share of rural subscribers (%)
Bharti Airtel	324.65	143.00	44.05	27.98
Vodafone Idea Ltd.	383.77	199.15	51.89	38.97
Reliance Com.	0.68	0.00	0.00	0.00
Tata Tele.	12.56	1.34	10.70	0.26
Quadrant	0.22	0.04	19.78	0.01
Reliance Jio	331.26	128.02	38.65	25.05
BSNL	126.86	39.45	31.09	7.72
MTNL	6.63	0.05	0.70	0.01
Total	1,186.63	511.05	43.07	100

Table 1.2: Service Area-wise Wireless Rural-Urban Subscriber Base

Service Area	Subscriber Base (In Million)			
	Total	Rural	Urban	% of Rural Subscribers
Andhra Pradesh (including Telangana)	86.97	41.84	45.13	48.11
Assam	23.54	11.99	11.55	50.92
Bihar	85.57	54.66	30.91	63.88
Delhi	52.96	1.69	51.26	3.20
Gujarat	68.93	26.73	42.20	38.78
Haryana	27.90	12.84	15.05	46.04
Himachal Pradesh	10.56	7.04	3.52	66.67
Jammu & Kashmir	11.48	5.13	6.35	44.65
Karnataka	68.15	23.61	44.54	34.64
Kerala	44.27	20.27	24.00	45.78
Madhya Pradesh	75.40	34.25	41.15	45.43

Contd...

Service Area	Subscriber Base (In Million)			
	Total	Rural	Urban	% of Rural Subscribers
Maharashtra	92.61	43.01	49.60	46.44
Mumbai	38.36	1.70	36.66	4.42
North-East	12.04	4.83	7.20	40.16
Odisha	32.73	21.42	11.31	65.45
Punjab	39.32	13.39	25.93	34.05
Rajasthan	65.16	33.16	32.00	50.89
T.N. (incl. Chennai)	82.11	22.16	59.95	26.99
U.P.(E)	99.82	58.97	40.85	59.08
U.P.(W)	64.87	31.31	33.56	48.26
Kolkata	26.30	2.87	23.43	10.91
West Bengal	56.41	35.32	21.10	62.60
All India	1,165.46	508.19	657.27	43.60

1.2. ICT:

The technology-led transformation which promises to leap forward India into the Information and Communication Technology (ICT) occupies an unusual position in society as it determines people's lives and enslave them to its service and influence. For service delivery in all sectors in both public and private, ICT usage is mandatory for people for accessing service delivery, computerised documents, direct beneficiary transfer and the Aadhaar linkage, etc. Almost all services including health, education, agriculture, economy, and others can be accessed only through ICT.

Generally, 'ICT is meant for storing, sending and retrieving digital files' (Bartlett (2002). *"ICT has been described as encompassing a multitude of equipment, software and services. It can be broadly interpreted as technologies that facilitate communication and the processing and transmission of information by electronic means. This definition encompasses the full range of ICTs, from radio and television to telephones (fixed and mobile), computers and the Internet"* (Kwapong, O.A.T.F. (2009).

1.3. Role of ICT in Development

In development contexts, the interface with traditional communication systems and

tools is also important, as are applications in areas such as agriculture, business, governance, health, and education⁶ (GenARDIS, 2008). Internet protocols, optical networks, mobile telephony, broadband technology and wireless offer impressive opportunities for development since they enable fast and cost-effective access to information resources and the provision of services⁷. (Alemna and Joel, 2006). It is an association with technology that connect people with one another at the global level for the aim of obtaining economic gain (2001:522). It also caters to a comprehensive service. For instance in farming, ICT is useful for maintaining land records, farm management, providing question-answer service, controlling pests and diseases, and managing rural development programmes⁸ (Meera et al., Data).

Of overall services provision, dissemination of information is a pivotal element of ICT. A study which was carried out by Godfrey (2015) highlighted a few issues among which dissemination of information is an essential aspect. The information is disseminated to larger and diversified categories residing in the rural area of Rakai district, Uganda, which would also be possible through comprehensive efforts and advisory skills of employees⁹ (2015). So, ICT can turn upside down the communication system in order to assist people to equip quickly with the current information.

Four interconnected characteristics of the new, advanced ICTs¹⁰ have been noted by Baryamureeba (2007). The first is their capacity for interactivity. Thus, the new forms of ICT offer effective two-way communication on a one-to-one or one-to-many basis. Second, the new ICTs are available 24 hours a day on real-time, synchronous or delayed, and asynchronous bases. Third, through its interconnected infrastructure, ICT now has a reach over the geographic distance that was not possible even in the recent past. The fourth feature of the new ICT is the continuing reduction in the relative costs of communicating, although this differs by location. Through this advanced communication system, it brings some tremendous changes among people residing in rural areas of developing countries. Aleman and Joel note that *"the information which would be exchanged through electronic devices has taken up a significant role in discharging certain service to people that leads them to become aware of both current information and education-related information. In addition, it can support people to have made adequate and significant decisions on agricultural products* (2006)."

Many earlier studies highlighted that there is a strong connection between ICT service and growth or development in any nation, especially in the context of developing countries.

Kiran Prasad (2017) mentioned in her article entitled “Communication, Culture and Change in Asia¹¹” that development policies in developing countries are not shaped in accordance with the needs of the majority of people that result in arising out a conflict between the basic needs and market-oriented perspectives on development. At this juncture, the middle-class in developing countries like India are striving for attaining an affluent position that results in attacking the already existed social system as well as emerging out social movements from people. These consequences would cause for searching out for real meaning of sustainability and equilibrium in the society, wherein all people would have an equal chance to access all the services offered. But, digital divide is a noteworthy issue that cannot be disregarded owing people are unequal in adoption and usage of technology. Such unequal adaption and usage is not restricted to this era but was started in the late 1970s. Since then, it has been visible in one or another form between and within countries, especially in both developed and developing nations¹² (Thomas & Parayil, 2008). Regarding this divide, most of the excluded categories across the countries are women, low-income youth and people pertaining to the rural areas. In this confusing situation, a programme was initiated, namely ‘Information Society for All’ to cater such service to all but has been unsuccessful in attaining its goals¹³ (Chiumbu, 2008).

A number of theses submitted by Indian scholars from Universities are uploaded on the Shodhganga portal along with studies from private Institutes covered in the press. Most of the literature review of the literary works refers to foreign research. The topicality of researches caters to urban rather than rural masses. Hence, mention of the studies consulted is done in Bibliography.

1.4. Digital India Initiatives:

India, a developing country consisting of people from diversified castes, religions, regions, cultures, ethnicities, etc., has currently been striving for attaining the status of a developed country with reference to health, education, human index, growth rate and so on.

As per the IUT 2017 report¹, it stands at 134th rank among 178 countries using the internet with an IDI value of 3.03 in 2017. Internet usage has also been augmented rapidly in India. As per a report of NASSCOM 2016 published in Communications Today, about 75 per cent of the growth in internet usage is found among people dwelling in the villages.

Table 2.1: Trend of technology-wise wireless data usage (in Terabyte)

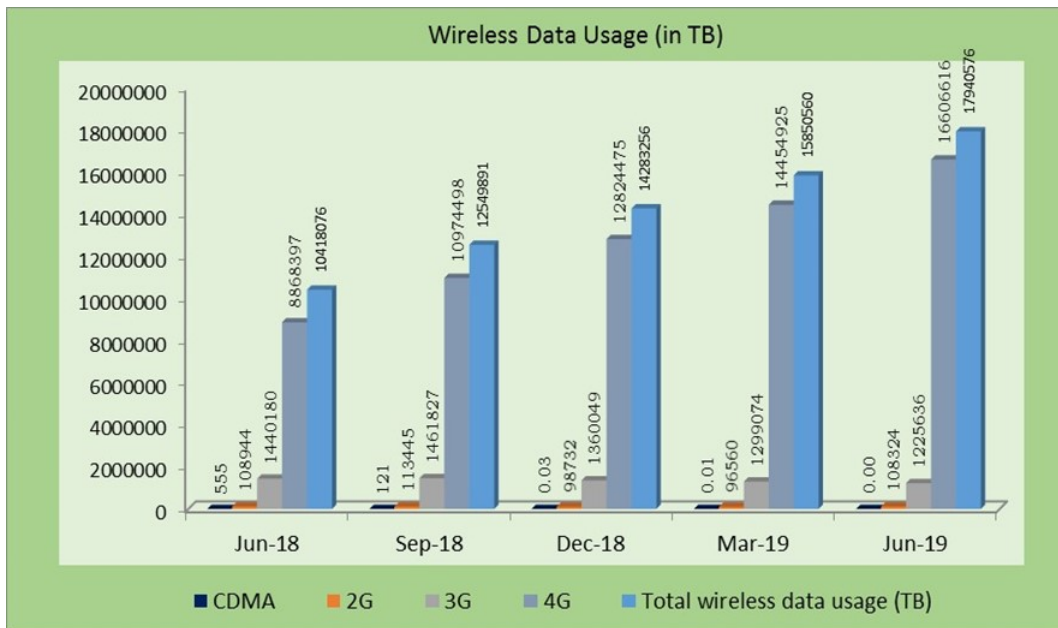


Table 2.2: Break-up of Rural-Urban Internet Subscriber Base (In Million)

Telecom Service Area	Narrowband		Broadband		Total Internet	
	Rural	Urban	Rural	Urban	Rural	Urban
Andhra Pradesh	2.60	2.40	18.36	28.55	20.95	30.95
Assam	0.67	0.70	5.38	5.57	6.05	6.26
Bihar	3.96	2.02	20.05	15.61	24.01	17.63
Delhi	0.21	2.63	0.50	33.75	0.71	36.38
Gujarat	1.40	1.68	10.24	28.09	11.64	29.77
Haryana	0.63	0.71	5.14	8.88	5.78	9.58

Contd...

¹<http://www.itu.int/net4/ITU-D/idi/2017/index.html>

Telecom Service Area	Narrowband		Broadband		Total Internet	
	Rural	Urban	Rural	Urban	Rural	Urban
Himachal Pradesh	0.29	0.21	3.02	1.83	3.31	2.04
Jammu & Kashmir	0.40	0.27	2.24	4.03	2.65	4.30
Karnataka	1.67	1.99	10.73	27.86	12.40	29.85
Kerala	1.00	1.15	9.40	13.79	10.40	14.95
Kolkata	0.16	1.48	1.39	13.25	1.55	14.73
Madhya Pradesh	3.15	2.44	13.33	24.34	16.48	26.78
Maharashtra	2.74	3.11	18.09	31.25	20.82	34.36
Mumbai	0.11	2.51	1.18	23.98	1.28	26.50
North-East	0.33	0.39	2.54	3.81	2.87	4.20
Odisha	1.55	0.52	8.77	5.98	10.32	6.49
Punjab	0.82	1.08	6.42	15.71	7.25	16.79
Rajasthan	2.43	1.78	14.08	19.86	16.51	21.64
Tamil Nadu	1.66	2.72	10.33	32.24	11.99	34.97
Uttar Pradesh (East)	4.88	2.44	19.63	20.98	24.51	23.41
Uttar Pradesh (West)	2.35	1.89	10.20	19.37	12.55	21.26
West Bengal	2.40	1.19	11.83	13.02	14.23	14.21
Total	35.42	35.31	202.85	391.74	238.26	427.05

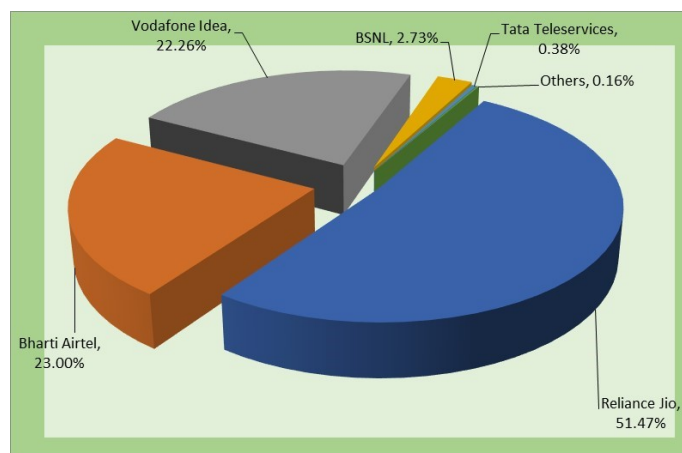


Figure 1: Composition of Wireless Internet Subscription

A programme entitled 'Digital India' was initiated after the inceptions of two prominent programmes christened 'Make in India' and 'Clean India'. The Digital India programme has penetrated maximum into all governmental departments. Even, its footprints are visible in all welfare schemes launched for people from vulnerable sections owing to the government's desire for catering of transparent and hastily service to all people.

Its aim through ICT intervention is to attain development in all sectors, cut off all communicational breaches, cater proper service online to all people, etc. In addition, it has strongly committed to delivering e-Governance. The Digital India programme embraces three visions to be achieved: 1) Digital Infrastructure as a Utility to Every Citizen, 2) Governance & Services on Demand, and 3) Digital Empowerment of Citizen. It has been catering by relying on the foundation of nine pillars, which include

1. Broadband Highways
2. Universal Access to Phones
3. Public Internet Access Programme
4. E-Governance – Reforming government through Technology
5. eKranti – Electronic delivery of services
6. Information for All Electronics Manufacturing
7. Electronics Manufacturing – Target NET ZERO Imports
8. IT for Jobs
9. Early Harvest Programmes

This attempt of India resulted in digital service delivery of a few sectors which are: high-speed internet, unique digital identity, mobile phone& bank account, common service centres, private space on Cloud and secure cyber-space, online and mobile service, portable citizen entitlements, ease of doing business, financial transactions (electronic & cashless), GIS as DSS, digital literacy, digital resources, Indian languages, collaborative digital platforms and no physical submission of documents. Because of these visions and pillars, these above programmes are initiated. Despite these services, there is still prevalence of various stigmas in connection to gender, age, geography, religions and other social evils. One such difference could be priority in access to the internet between urban and rural that

urban users are increasingly going online for communication, social networking, shopping and ticketing, while rural people use it predominately for entertainment.

1.5. Mobile phones & Development:

The mobile phone has become the world's most ubiquitous information communication technology (ICT) device and has been adopted by billions across the globe, including those in the developing world. Studies have shown that people willingly use cell phones because of their most assumed benefits including constancy of communication, mobility, individual control and privacy (Horst & Miller, 2006: 79), the compression of distance, agency stimulation and the upgrading of prestige and social status (de Bruijn et al., 2009). Telecom companies have created and developed products and services that expanded the use of mobiles beyond keeping in touch with friends, family, or clients, but also for facilitating business and commercial transactions—mobile commerce or m-commerce. Through products such as GCash and Smart Money, Globe Telecom and Smart Communications subscribers are able to remit money (locally and internationally), pay bills, pay government taxes, donate to charitable institutions, order food for delivery, purchase products such as food and clothing, and reload prepaid phones through text messaging. Together with the benefits of new technology are costs and risks that are often unequally distributed throughout society. Canadian scholar Harold Innis has pointed out that the diffusion of new communication technologies often entrenches or recreates hierarchical power structures.

Under the Digital India, which is an umbrella programme, there are many additional and minor programmes initiated by both the Central and State governments. These include the 'Digi-Dhan Mission' initiated by the government to achieve a target of 25 billion digital transactions, which has been outlined in the Union Budget for the fiscal year. UMANG app was launched by Prime Minister at the Global Conference on Cyber Space with aim of bringing over 162 government services online to make people beneficiaries of such services and also ensure all such services to be delivered promptly and transparently. Really, all such initiatives make it imperative to tap rural India. In this context, questions that have arisen are:

1. What kind of unconventional uses, products and services of mobile phones have been developed?
2. How many people are aware of such service under the Digital India programme?
3. How many beneficiaries are using this app?
4. Does the widespread adoption of mobile phones result in changes in the material circumstances of users?
5. What are the possibilities and/or limitations, particularly among low-income users?
6. What role does the adoption of mobile phones play in economic development?

This study also focuses on the questions above and many more.

As per the guidelines of the Digital India programme, at least one person in each household shall become e-literate. For this programme, the government has already allocated Rs.1,13,000 crore as it consists of a firm desire towards making people digitally literate and preparing the country towards knowledge-based information. Subsequently, many private organisations are dovetailed with the government and have started working towards these digital goals by extension of their helping hands. For instance, both BSNL and Reliance assisted the government to attain Digital India's goals by ensuring the availability of digital infrastructure to all people, especially those residing in rural areas. In collaboration with Bharat Broadband Network Limited (BBNL)², the government has strived for reaching out to Panchayats with the mobile network as a part of the 'BharatNet Programme', which was launched in the year 2011. Under this programme, each Panchayat shall be connected with a broadband network laid through National Optical Fibre Network (NOFN). This programme aims to include into its coverage 2,50,000 Panchayats and work for reaping a better result that would cause for discharging proper services to every citizen (Midha Rahul, 2016).

As per the report of the committee on National Optic Fibre Network 2015, access to high-speed broadband is a key infrastructure for the socio-economic development of any country in the modern age. Its democratizing influence has the power to reshape the

²<https://www.pwc.in/assets/pdfs/publications/2017/digital-india-targeting-inclusive-growth.pdf>

marginalised sections of the economy. Affordable and accessible broadband is a vital development enabler for building inclusive and sustainable knowledge societies. It enhances productivity and national competitiveness, acts as a crucible for the innovation in social and economic sectors, and enables better governance.

1.6. Other programmes related to ICT/ Mobile use for development:

Few scholars feel that the digital initiatives have impacted positively on the agriculture sector, and the welfare of entrepreneurs and women, particularly those residing in rural areas (Gupta and Arora, 2015). Midha Rahul states the Digital India programme is a great plan for India to have a better knowledge future as it is keenly focusing on a few special areas including health, agriculture, entrepreneurs, etc. (2016). A programme entitled 'Internet Saathi' was launched in Gujarat, Rajasthan and Jharkhand States for reaching out to 4,500 villagers and to digitally connect them with each other in a speculated period of the next 18 months (Chandra Boro, 2017). In Gujarat³, the government, in association with ICICI bank, has adopted Akodara village in Sabarkantha district, known as the first digital village in India; encouraged all villagers to open bank accounts and to learn pursuing cashless transactions. It further has done a tremendous job of installing CCTV cameras in the village for monitoring all the activities of villagers. Kerala⁴, which is known as the first literate state, is also considered as the first digital state. Finally, Andhra Pradesh has also initiated a programme entitled 'Fibre Grid Initiative' under which internet service will be made available to all people. Another programme, e-Pragati has been envisaged to have 'enterprise architecture across the state'.

1.7. Telangana Initiatives:

Telangana government also adopted this 'Digital India programme' to deliver efficient and timely service, and under this programme has decided to attain the digital goals of the Central government. On 1st July, this programme was officially launched on one-time in many places to promote online payment, green phablet for agriculturists, promoting digital literacy, cyber hygiene and cyber-security, biometric attendance system,

³<https://www.pwc.in/assets/pdfs/publications/2017/digital-india-targeting-inclusive-growth.pdf>

⁴<https://www.pwc.in/assets/pdfs/publications/2017/digital-india-targeting-inclusive-growth.pdf>

and Wi-Fi. Its digital programmes have been segregated into two sides -- 1) supply-side and 2) demand-side. Supply-side includes 1) laying OFC to each household using water-grid trenches, 2) providing 4G service through the state, 3) install Wi-Fi facility in major cities and towns, and 4) e-Panchayat Scheme programme under which One Stop Shop (OSS) kiosk shall be installed in each Panchayat. Programmes initiated under supply-side were installing 4G service in major cities, enabling Wi-Fi facility at tank bund, necklace road, Charminar, public garden and railway station and so on. In addition, the government is also now working towards OSS kiosks installation in each Gram Panchayat. On the demand-side, there are programmes including 1) Digital Literacy programme under which one member of each household shall be taught to become digital literate, 2) School computer literacy programme, under which basic computer education shall be taught to students from class 6th onwards, 3) Expansion of MeeSeva service, 4) Conversion of as many MeeSeva services as possible into mobile apps or on the mobile platform, and making mobile governance a reality in Digital Telangana, 5) Identifying technology solutions for all government agencies to cater a better service to the citizens. Until now, so much has been done under these above programmes and in the case of MeeSeva, the government has a plan to extend its services.

As part of Digital India, Telangana Government has initiated various policies to ensure its people are digitally empowered. Such policies are as explained below:

E-Governance:

The government has initiated various programmes to simplify the government service at the optimal quality, time place and cost. There are a few programmes initiated which are as follow below.

1. MeeSeva Portal
2. Citizen Service with a Difference e-Seva
3. Telangana State Portal
4. TS Online
5. E-Procurement

6. CFST-Transport Department Services
7. CARD-Computer-aided administration of registration department
8. TSSWAN-TS State Wide Area Network
9. TS State Wide Area Network
10. TS State Wide Video Conference
11. SoFTNET
12. KM-ATOM
13. E-Return-VAT eReturn
14. CDSC-Online Issue of Statutory Forms of CT (Commercial Taxes) Department
15. MGNREGS-Mahatma Gandhi National Rural Employment Guarantee Scheme

1.8. Research Problem:

The patterns of Internet use vary between rural and urban areas. While urban users are increasingly going online for communication, social networking, shopping and ticketing, rural use is still predominantly for entertainment. The idea of digitally-oriented development is as powerful and seductive as the technology. No single technological revolution has changed the lives of current generations in the way that the Internet has. The official policy vehicle of the present dispensation on technology and development, Digital India, is a flagship programme that seeks to “transform India into a digitally empowered society and knowledge economy.” This covers Digital Infrastructure as a Public Utility, Governance and Services on Demand, and Digital Empowerment of Citizens. The government announced the ‘Digidhan Mission’ earlier this year to achieve a 25 billion digital transactions target, outlined in the Union budget for this fiscal year. Prime Minister Narendra Modi also launched the UMANG App at the Global Conference on Cyberspace, which brings over 162 government services online for the ease of citizens. All these initiatives make it imperative to tap rural India. Their current level of awareness, usage pattern and probable priorities are being assessed through the current study.

⁵<http://www.itu.int/net4/ITU-D/idi/2017/index.html>

⁶http://www.business-standard.com/budget/article/only-5-states-account-for-70-of-exports-economic-survey-shows-118012900344_1.html

1.9. Justification of the study:

As per the IUT 2017 report⁵, India stands at 134th rank among 178 countries using internet with an IDI value of 3.03 in 2017. According to NASSCOM 2016 report, 75% of the growth of internet is coming from rural areas. It is proposed to take four villages from two districts of Telangana for the study. The report published in the Economic Survey 2018-19⁶ has pointed out that for the first time in India's history that five states Maharashtra, Gujarat, Karnataka, Tamil Nadu and Telangana account for a whopping 70% of India's exports. Tabled by Finance Minister, the survey has for the first time included data on the international exports of states. Such data indicates a strong correlation between export performance and states 'standard of living', it says. States that export internationally and trade with other states have been found to be richer. Hence, Telangana as a state was selected for the study.

1.10. Objectives and Hypothesis:

In the light of the review of literature and the current state of Internet access and use in rural India, whether it is broadband or through data connectivity, the following study objectives have been defined.

1. To map out mobile access and use, at micro level, of select villages of Telangana
2. To access the areas in which internet connectivity has been most useful and to what extent, and suggest methods and means as to how internet can be optimally utilised for rural development. The parameters to assess can be at the individual level and stratified group level within the community.
3. To ascertain the role of government (State/Central), Panchayats, NGOs and Local Administration in monitoring the use of digital/media in the villages.
4. To understand levels of mobile literacy in both genders and identify gaps therein

1.11. Selection of Villages:

Two districts - Nalgonda and Medchal - in Telangana were identified and two villages from each district were selected for the study.

1.12. Methodology & Sampling:

The proposed study is exploratory and experimental in nature. It is envisaged that the case study method along with ethnographic observations will reveal the attitude for the utilisation of digital media. To create possibilities of e-interventions such that there is a desire to have social and behavioural change through communication it is envisaged to show an audio/visual clip of the identified six areas mentioned above.

1.13. Methodology

This survey adopted both qualitative and quantitative methods to investigate research phenomenon, and also generalised empirical findings across the nation. The data has been segregated both into secondary and primary data. As part of procuring secondary data, internet has been considered a prime source of literature accumulation. It also depended on non-e-resources involving books, journals, and documents of the government. For the procurement of data, we approached the Mandal office located in Rajendranagar and the State Government Ministry of Information Technology, Electronics & Communications Department, Telangana. Though we failed to obtain accurate information from officials and departments concerned but had been directed to other sources known as non-government organisations. In addition, the relevant information has also been procured from NGOs working on the 'Digital India' programme. One of the prominent NGOs engaging with Digital India programmes is the Telangana Information Technology Association (TITA) which usually aims at delivering teaching on digital literate and cashless transactions to people and desires to attain the goals set by the Central government. Its staff elucidated their field-based experience and emphasised their vision of accomplishing their task in accordance with the guidelines and norms of the government. This NGO until now has adopted a few villages and are working among different segments of people in the society.

In addition to comprehending people's knowledge on the usage of mobile phones and digital literature, four villages in two districts - Adilabad district that is located far away from Hyderabad City and Nalgonda district that is located near to the city - were selected. Selection of these two districts aided in understanding how geographical difference determines the awareness of digital literacy and mobile usage. These four

villages are coequal between these two districts and they have been selected for the study based on three significant criteria: 1) Digital awareness and adoption level, 2) Mission Antyodaya Ranking and 3) Availability of IT Infrastructure and Connectivity. These four villages are unequal to each other in terms of different geographical locations and social compositions of people, etc. Regarding geographical differences, Adilabad district as aforementioned is located quite far away from Hyderabad while Nalgonda district, where people would have more exposure to different schemes and policies, is located close to Hyderabad City. In Adilabad district, two villages are selected, namely Mukhra and Khandaw which were ranked better performance village and worst performance village, respectively, by ranking order of Antyodaya.

The locations of these villages are also varied. For instance, the location of Mukhra village is near to headquarters of the district by about 30 kilometres away while Khandaw is located about 50 to 60 kilometres away. Such a difference does not exist between Darveshpuram and Telakantigudem villages in Nalgonda. Each village is located about 10 kilometres away from the district headquarters. For the selection of respondents in each village, a sample calculator was deployed to select the adequate number of respondents from each village, resulting in 152 respondents sampled in Mukhra village, 144 in Khandaw village, 184 in Telakantigudem village and 196 in Darveshpuram village. Further, these sampled respondents are separated based on gender and age consisting of two groups such as 1) 15 to 35 years and 2) 35 to 60 and above. It means that both the genders are given equal proration in being selected to be interviewed, as well as each gender is further split into two equal sets based on the two age groups stated above. This study has relied on ODK -tool software in which a questionnaire was made with 62 questions in total. This software-based questionnaire was found to be easier in entering answers, more durable as compared to carrying schedules, and it aids in entering the empirical data/information into the MS Excel file online while procuring primary information from the respondents in the field. After the field visit is accomplished, this empirical data has been transferred into the SPSS file from the MS Excel file.

Adilabad District:

Adilabad is one of the backward districts of Telangana State consisting of elevated

tribal density. It is located about 300 kilometres away from Hyderabad and shares its border with Maharashtra. As aforementioned, there are two villagers selected; among them, Mukhra village has bagged the reputation of a digital village in the nation and is treated as a developed village in the district. This village is located 9 kilometres away from its Mandal, Ichoda and about 38 kilometres away from the district headquarters. According to Village Development President (VDP), the village has around 250 households but the total number of households according to census 2011 is 117. It has taken VDP information as the base for selecting 152 respondents to be interviewed. This village is composed of two social groups - Maratis (backward caste) and Madigas (scheduled caste). Maratis control the entire village as they are the dominant group in the social category and well-off economically. According to an informant, they recently pooled a common fund of the village by collecting a small amount of money from each household and lent that money to households requiring financial support for cultivating their crops and incurring other financial related burdens. They would be charged with three per cent of the loan amount as interest. For instance, if a person or household borrows Rs.10000, he/she has to repay Rs.13, 000 over a period of one year. Now, that cumulated amount reached out to about Rs.80 lakh in total. In addition, the State government has also initiated various schemes to keep this village digitally advanced by installing a signal tower. It also distributed three acres of land to each of 33 households.

PARTICIPANTS:

Sampling: Villages were selected based on four indices of the population -- mixed social grouping having differential social and demographic composition, distance from the urban municipal corporation, proximity from institutional sources of finance and presence of self-help groups. After the village selection, 10 per cent of the rural households or 120 respondents whichever is lower was randomly selected. The selection of respondents was based on stratification on the basis of gender and age group and occupation. Only one respondent was interviewed per household on the basis of ICT use, education, occupation and gender. Three age groups were considered: 18-30, 31-45 and 46-60 and above.

INSTRUMENTS:

Survey: Two survey schedules were formulated in Telugu for the selected village sample to

understand the respondent's current level of knowledge of mobile and mobile apps as well as internet usage. It was envisaged to access whether the problem-solving capacity of e-interventions existed in the mental space of the individuals. After showing them the six-minute AV clip pertaining to each of the areas - health, transport, microfinance, governance, education and entertainment, their areas of priority and desire were asked and the kind of intervention that they sought was ascertained.

Ethnographic Study: This study was carried out with participant observation by the team well versed in the local language.

1.14. Analytical Framework: Analysis and Report:

The finalised interview schedule after correcting errors from the pretest in Telugu was administered to selected respondents to allow a qualitative understanding of Internet use in order to ascertain the digital utilisation and penetration. While survey data analysis was computerized, the ethnographic data was manually analysed. The quantitative data analysis was done using SPSS whereas all qualitative data were analysed manually.

1.15. Proposed Output:

This study may be a step forward in understanding rural communication and preparedness for digital enterprises and cashless society. The study is aimed at providing critical inputs in the fast-changing ICT along with the usage of local language. It will also help to usher an opportunity to strengthen rural India and address their problems with quick intervention. Also, it will allow a better understanding of the cultural trends and media usage so that future messaging can be accordingly modified to suit the cultural preferences.

1.16. Utilisation of Findings:

From the fallout of this case study, a project will be proposed:

- A. To ascertain the areas in which the internet has been most effective in rural development among men and women;
- B. To suggest methods and means as to how internet can be optimally utilised for rural development

- C. To ascertain the roles of Government (State/Central), Panchayats, NGOs and local administration in motivating the use of digital/media in the villages.
- D. To create possibilities of e-interventions such that there is a desire to have social and behavioural change through communication and preparation of such an SBCC tool may be a possible outcome after a pan India study for policy reformulation.

1.17. Chapterisation:

This research study is segregated into seven chapters. The first chapter deals with the introduction while the second chapter is about the reviews of earlier literature. The third and fourth chapters are about the overall data collected from the districts and their analysis leading to information about the usage of mobile phones and awareness as well as training needs on mobile apps. The fifth chapter is regarding the conclusion drawn from the study, limitations of the study and future research areas. The chapter ends with recommendations and the envisaged role of NIRDPR.

Chapter- 2

LITERATURE REVIEW

Combined with a young population, increasing income and decreasing mobile prices, the mobile revolution is contributing to social, economic and political transformation.

ICT, Urban Governance and Youth,

Report 4: Global Youth-Led Development Report Series

2.1. Mobile Connectivity:

The literature on mobile connectivity and usage can be broadly divided into the statistics of usage available as per reports and research studies done in the area. Besides, a conceptual framework is also suggested that relate to theories in this area. India has a total of 5,97,618 villages and out of this, only 43,088 are not covered with internet connectivity. India is one of the largest and fastest-growing markets for digital consumers with 560 million internet subscribers in 2018, (Mc Kinsey Report, 2019). Competitive offerings by telecommunications firms have turbocharged internet subscriptions and data consumption, which quadrupled in both 2017 and 2018, and helped bridge a digital divide; India's lower-income States are growing faster than higher-income ones in internet infrastructure and subscriptions. Indians have downloaded more apps - 12.3 billion - in 2018. As per the report of ASSOCHAM 2016, the villages that remain deprived of mobile connectivity is largely due to the fact that providing mobile connectivity in such locations is not commercially viable for service providers.

The document further elaborates that for last-mile connectivity, significant efforts are needed to customise apps and services to cater to the local needs. Finding vendors who can provide such applications has become a challenge. The average Indian social media user spends 17 hours on the platforms each week. The share of Indian adults with at least one digital financial account has more than doubled since 2011, to 80 per cent, thanks in large part to more than 332 million people who opened mobile phone-based accounts under the government's Jan-Dhan Yojana mass financial-inclusion programme. (Pradhan Mantri Jan-Dhan Yojana, November 20, 2018, pmjdy.gov.in/account; Asli Demirgüç-Kunt et al., *The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution*, World Bank, April 2018.).

Alibaba-backed Paytm, India's largest mobile payments and commerce platform, has more than 300 million registered mobile wallet users and six million merchants. (Harichandan Arakali, "Paytm reloaded: It's no longer just a mobile wallet", Forbes, March 15, 2018.)

According to a report by Gyana (2019), all Union Territories are covered by mobile networks. Indian government has strengthened connectivity within Andaman and Nicobar Islands by initiating 2164.23 km of Submarine Optical Fibre Cable.

2.2. ICTs and Development Goals:

There is a growing literature on ICTs in developing countries (see Walsham and Sahay (2006) and Avgerou (2008) for literature reviews) but a number of researchers (e.g. Heeks (2006), Thompson (2008)) have argued that much of this literature does not address the question of what is meant by development. ICT-based initiatives in India may be grouped under six broad development categories- use of mobile and mobile apps for

1. agriculture and livelihood,
2. governance,
3. transport,
4. health,
5. education, and
6. entertainment

The worldwide explosion in the popularity of mobile devices extends to the field of education research and practice. From a research perspective, there has been a significant increase in the number of articles being published on mobile and ubiquitous learning research (Hwang & Tsai, 2011), (Hwang, G.-J., & Tsai, C.-C. (2011).

In a study conducted by Geoff Walsham, in 2007, the rapid spread of this new technology across the planet has, in large measure, outstripped research on the topic. Nevertheless, Donner (2008) was able to review around 200 studies on mobile phone usage in developing countries. He noted that there were still relatively few detailed studies

on rural users and he called for further research which provided a better understanding of the linkages between the richer and poorer communities, and between rural and urban users. The same author (Donner, 2007) provided an example of such work in an Indian context through a study of small businesses in the town of Hyderabad, and the role played by the mobile phone in customer acquisition and retention. He concluded that mobile phones were still not crucial to these small businesses in customer acquisition and retention, and that we should be careful to ascribe major transformative benefits to the mobile phone without hard evidence of how this is achieved.

Regarding ICT accessibility, the mobile device has occupied a significant position as everybody can access this service from it (Godfrey, 2015). It has the potential to break the rural-urban developmental gap by delivering information on a variety of socio-economic issues (Aker and Mbiti, 2010). Mobile phone has a significant history among the farmers of Rakai district, Uganda in terms of transforming their lives through both voice calls and short messaging service (SMS) that would make service simplified, convenient and affordable, which resulted in farmers accessing agricultural information (Godfrey, 2015). India has not been participated in the landline phone revolution but experienced unprecedented growth of mobile phones with over 970 million subscribers by the end of March 2015, and occupied the second position next to China. Its teledensity (number of phones per 100 people) has also enlarged from 13 per cent in March 2006 to about 77 per cent by the end of March 2015 (Mehta, 2016).

2.3. Initiatives in mobile studies:

Mehta (n.d.) surveyed 418 persons of 12 villages in Bihar to comprehend how usage of mobile impacts on livelihoods of rural people acknowledged that mobile aided them in timely accessing the information on employment, education, health, business, transferring funds and also for having contacted with their family members staying away. On other hand, they confronted miscellaneous snags - shortage of electricity to charge their phones, scant knowledge about value-added service, high-priced mobile handset, complicated mobile application process, call drops and poor signals, and money deducted fraudulently by the operators without any intimation either through call or message. According to this study, a substantial proportion of rural people use mobile phones for receiving calls only

from their migrant family members. In the case of women, they use mobile phones exclusively to receive calls from their family members. Over and all, they procure information from their relations on the cultivation of land (64 per cent) including information of seeds and fertilizers, growing crops (13%), training about the crops (15%), stage of harvest (8%), and entertainment (7%) and having contacted with others during the emergency, respectively. In addition, some of them used mobile phones to enhance their livelihood skills through education and availing information on healthcare (Mehta, 2016).

Michailidis, Stefanos and Efstratios (2012) carried out a field study among rural people in Western Macedonia and Greece by interviewing 490 people to capture both potentials and pitfalls in the usage of mobile communication technology and found out how divergent factors affected the adoption of technology. They proposed a way to incorporate this technology into rural development policies and primarily in 'Less Favoured Areas of Developing Countries.'

James and Mila (2007) noticed that mobile phone would reduce the digital divide between developed and developing countries, and also considered this device would augment communication among people and can help implement welfare schemes properly in poor countries. So, presently many people in poor countries have started accessing such services; for instance, around 97 per cent of people in Tanzania, a poor country, started accessing the mobile phones' service.

Johnson (2013) studied workers who are migrated from West Africa to Lisbon, Portugal during the period 1999-2003, also about how they relied on mobile phone and other new information technologies to maintain communication with their kith and kin at their native place. He further noticed gender inequality in the usage of mobile, which means that males are tremendously using mobile phones than women.

Abraham (n.d.) assessed the usage of mobile phone among fishing community in the southwestern part of Kerala and highlighted how mobile enlarged their profits. Once they used to be cheated by merchants and transporters who offer them less price for their catch.

Using mobile phones, the fishermen obtain information about the current prices at the market that resulted in price dispersion and also the price fluctuations were reduced. As a result, fishermen believe that their quality of life has been improved as they feel less isolated and at less risk in emergencies. He concluded that there were clear benefits to the fishermen in areas such as responding to market demand, wasting less time and resources and being less isolated and at risk in emergencies. Abraham argued more generally that demand-driven bottom-up interventions are more likely to succeed in developing countries than top-down ones, and that technologies such as the mobile phone, which reduce transaction costs, are likely to be better investments than amorphous, ill-defined attempts to bridge the 'digital divide'.

Mtega and Malekani (2009) proposed the use patterns, challenges and way forward for the effective use of telecenters in Tanzania by studying four such centres involved Kilosa, Mpwapwa, Kasulu and FADECO. The service of such centres is at a nascent stage. He concluded that such centres should provide relevant information to people and different formats should be used to present information as people have different information searching skills. Moreover, telecenter catchment area is an important factor in building an information-rich society.

Malecki (2003) studied telecommunication technology of rural areas in the USA and found that major pitfalls were connected with the shortage of human capital and noted that the demands of the people must be taken into consideration. He further highlighted how businessmen use the internet.

Dey, David and Renee (2011) carried out a study on the usage of mobile phones by farmers in Bangladesh and its difficulties. They found certain obstacles including language barriers, lack of literacy and unfamiliar English terminologies, inappropriate translation to local language (Bengali) and financial constraints. They suggested that appropriate technology needs to be developed for a better understanding of the use and consequent integration of technology in daily lives.

Furuholt and Edmund (2011) explained about the necessity of ICT usage for farmers

living in rural Tanzania and have depicted how mobile phone influences the entire cyclic farming life during the year, which results in tremendous changes occurred in the entire livelihood constructs and enlarged opportunities and reduced risks for rural farmers.

Wesolowski et al. (2012) found that the rapid adoption of mobile phone technologies in Africa was offering exciting opportunities for engaging with high-risk populations through mHealth programmes, and the vast volumes of behavioural data being generated as people use their phones provide valuable data about human behavioural dynamics in these regions. His study shows that distinct regional, gender-related, and socioeconomic variations exist, with particularly low ownership among rural communities and poor people. It also examines the patterns of phone sharing and highlights the contrasting relationships between ownership and sharing in different parts of the country.

Masuki et al. (n.d.) found that agricultural information is a key component in improving small-scale agricultural production in East Africa and linking increased production to remunerative markets, which led to improved rural livelihoods, food security and national economies. Research findings showed that the use of phones was appreciated by rural communities as an easy, fast and convenient way to communicate and get prompt answers to respective problems. Male farmers were found using phones than female farmers, yet more female farmers requested information on NRM and agriculture as compared to the male farmers. Opened opportunities such as emerging of strong collective action among social groups and farmers are coming together to market their produce.

Jensen (2007) studied the same fisheries case using different field data and an economics lens and concluded that there were measurable benefits from the mobile phone technology including the complete elimination of waste, a dramatic reduction in price dispersion and an increase in both consumer and producer welfare.

Aker C. and Isaac (2010) emphasise that mobile can connect people across the globe in terms of diminishing difference between rural and urban, connecting one individual with another individual, not only providing information and also hook up them to markets and other services. For instance, farmers in Tamale of Ghana used to send text messages to get

updates on the corn and tomato prices at Accra located 400 kilometres away. In the case of job opportunities in Benin, unemployed people in Niger relied on mobile phone.

A study by Prof Ashok Jhanjhunwala, IIT Madras (Published in the ASCI Journal of Management 31 (1&2), 40-47, 2000) titled 'Challenges in Rural Connectivity for India' concludes by saying that rural India is ripe for progress, representing enormous potential in terms of economy and human resources, and connectivity is the key to harnessing its resources. In another study 'Enhancing Telecom Access In Rural India: Some Options', Subhash Bhatnagar from IIM, Ahmedabad (2000) suggests that deregulation of rural telecom sector with voice, email in a local script and a variety of information services riding over the internet answer to the communication needs of rural areas. In another study, Debadutta Kumar Panda and Jasmine Mohanty (2007) suggest that one of the significant gains in information could come through the transformation of production processes. Further, effective market changes should be initiated where information flows in all directions so that farmers can scan the market. The six sectors that the rural telephony affect have been suggested by Michael Schwartz who thinks that the internet and mobiles will revolutionise several sectors in rural India. In another study, Dr. V.P. Sharma and K.V. Rao conclude that there is a need to improve the services for "Bridging The Digital Divide: Information Kiosks in Rural India...." Further "Conscious efforts are required to plan, digitise and host all farmer-centric information on World Wide Web so as to make the research findings, package of practices and other recommendations and priorities of the government, available to all the farmers in their local language. To bring this into effect, recent initiatives like the Kisan Seva Service, and case studies like the Punsari village in Gujarat as a model smart village and the Gnatswara in Karnataka where a missed call on a helpline number enables resolutions to issues are examples of some such initiatives.

In another study on the use of ICT in agriculture, Ramasubbian et al. (2015) conclude that when compared with the population of India, the information distributed through calls on Kisan Call Centre was very low. People belonging to the central part of India were in the top position to interact with KCC when compared to other parts of the country.

In another study in 2013 titled 'ICT uses for inclusive agricultural value chains',

Calvin Miller, V.N. Saroja and Chris Linder opine that obtaining expert advice from distant experts, ICT – particularly the mobile phone – has made obtaining the right information on demand achievable for many people, despite their remoteness. The impact on productivity can be measured in terms of increased returns to farmers, through changes in cropping patterns, yield increases and better prices for inputs and output. Non-price factors, such as information on the availability of inputs, seed quality and the adoption of modern techniques, are also critical to raising productivity.

2.4. Different Effects of Mobile Usage:

Prof. Binod C. Agrawal, in his study, 'Can Mass Media Help Accelerate the Process of Rural Development?', identified three distinct but interrelated components which might be influencing rural development - culture, mass media and new communication technologies. These three components are sub-sets of the larger socio-cultural and geopolitical milieu. Graphically, they are represented in Figure 2, which shows rural development as a process and resultant effects of the interplay among the three components in a larger geopolitical sphere in which human beings are at the heart. Agrawal attempted to point out the potentials and limitations of mass media as a tool and means for rural development.

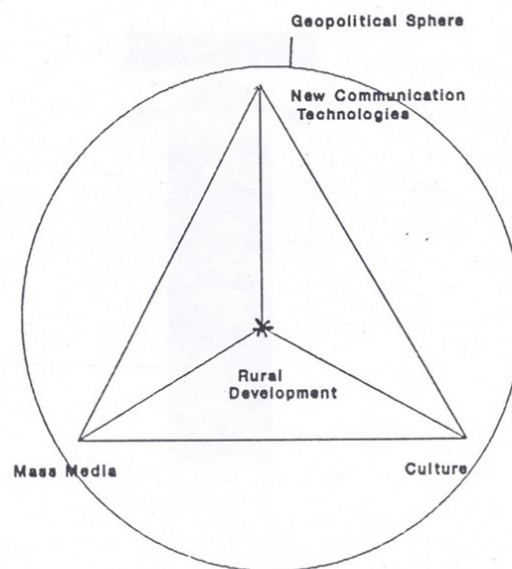


Figure 2: Model of Understanding Media and Rural Development

Another study carried out by Mehta among 418 respondents pertaining to 12 villages of six districts in Bihar shows how mobile is useful for human communication. He states that mobile phone can be useful to avail information about agriculture and non-agricultural activities. Besides, people would acquire timely information on employment, education, health and business, and it can also be useful to transfer funds and to have contact with their family members during emergencies. Despite its positive attempts, there are certain hindrances for accessing such mobile services in rural areas due to lack of electricity for charging mobiles, dearth of knowledge about value-added services, high cost of mobile handset, local content mobile applications, call drops or poor signals in addition to fraudulent money deduction by operators without any intimation (2016). In another study by Pratibha Singh et al. (Journal of Rural Development, 2015), the problems that restrict usage of mobile phones were explored. The results of the analysis revealed four major categories of constraints in the plains, viz. respondents' capacity, accessibility to ICT services, mobile use, and network coverage problems, particularly in the hills.

In the Compendium of ICT Apps by United Nations on Health Care, a list of examples is provided under four major categories - health administration, health care delivery system, health Information, and patient care. In all these, smartphones have a major role through the use of m-health applications.

In her work titled 'ICT as an Engine for Uganda's Economic Growth: The Role of and Opportunities for Makerere University', Venansius Baryamureeba (2007) has noted four interconnected characteristics of the new, advanced ICTs. The first is their capacity for interactivity. Thus, the new forms of ICT offer effective two-way communication on a one-to-one or one-to-many basis. Second, the new ICTs are available 24 hours a day on real-time, synchronous or delayed, and asynchronous bases. Third, through its interconnected infrastructure, ICT now has a reach over geographic distances that were not possible even in the recent past. The fourth feature of the new ICT is the continuing reduction in the relative costs of communication, although this differs by location. ICTs such as radio, television, telephone and email provide relevant information to the poor that can help them to access education and information on health, financial, and government services; production, storage and marketing of farm and non-farm products. As a result of the

information, they are able to improve their productivity and income. A combination of mobile phones and radio has enabled the African population to participate in phone-in programmes over important issues including political debates, health issues, agriculture, education, environment and gender issues, which have a high impact on their lives.

2.5. CSOs and Mobile based development Approach:

Unlike all studies consulted for compiling the work, it is submitted that most literature concentrated on Civil Society Organisations (CSOs) to actively involve themselves in rural economic and social life by creating ICT-based social enterprises. Community activists, citizen groups and donor-dependent CSOs based on the use and diffusion of ICTs, particularly the Internet, claim to enhance employment opportunities, generate income streams for alleviating poverty, empower Dalits and women, create sustainable livelihood, strengthen neighbourhood ties, support e-governance, help overcome cultural isolation, and combat exclusion and deprivation. These ICT-CSOs began to focus their attention on the dissemination and deployment of ICTs in the rural sector, capitalising on the lead role taken by donor agencies or 'social venture capital'. TITA in Telangana has done exemplary work in this area. Two major projects in India, namely the M. S. Swaminathan Research Foundation's (MSSRF) Information Village Research Project (IVRP) in Puducherry, south India, and Development Alternatives (DA) of TARAKendras in Bhatinda, Punjab, north India are being quoted. It is noted that the terms of debates in development theory and practice such as modernisation, modes of production and dependency theories in the last three decades have been filled by powerful discourses of participation, empowerment, microenterprise, self-help, good governance all fueled through ICT access and use. At the same time, the literature consulted is top down in nature where the use of ICT as dictated and directions of how to use and for what purpose have been dealt with at large. For the first time, this study talks about usage from the perspective of the user - how they want rather wish to use the net and if then to what extent is it impacting their life. Questions for future perspectives were also raised as to how they want to be assisted to learn usage and techniques and interesting insights were gathered. It's a shift from the erstwhile studies of 'strengthening the local people', 'enhancing people's participation', 'promoting good governance' or facilitating microcredit availability.

Development Alternatives, a CSO in Bundelkhand, has come up with TARAhaat.com, a special portal designed for rural communities, and TARAkendras, the multipurpose kiosks with a thrust on e-education. Its major objectives included attempts to use ICTs for creating jobs, promoting sustainable livelihoods, and altering rural marketing systems. It believed in social engineering.

TARAhaat, an Internet portal supporting a network of franchised computer kiosks, launched TARAkendras in Bundelkhand (Uttar Pradesh) and Bhatinda (Punjab). It aims to deliver a wide spectrum of services through ICTs and expects to earn revenues by pricing these services, as well as levying membership fees and commissions. One of the striking features of TARAhaat is that it was not conceived as a voluntary venture from the very beginning, although its sponsoring agency, DA, is a CSO operating in Bundelkhand.

2.6. Mobile & Cultural perspective (TEXTING CAPITAL):

Mobile Phones, Social Transformation, and the Reproduction of Power in the Philippines by Cecilia S. Uy-Tioco (2013) says that much of the research on mobile phones, and media in general, has been on the user or audience, focusing on issues of identity, representation, and consumption. In his book, "Television: Technology and Cultural Form, Raymond Williams is concerned about the relationship of modern communication media to social structures and social change - "their evolution as institutional practices; their degradation by social elites, particularly by the intellectuals; their rhetorical forms and textuality; their imbrications in the textures of everyday life; and their potential for creating a better world." Technologies, be television, radio, personal computers, or mobiles when newly created and released to the market for consumption, are initially the new playthings of the wealthy and elite. As technology improves, the product becomes cheaper and is then used and consumed by the larger population. When more and more people begin using a particular technology, it invariably becomes the part of daily life, inscribed in our informal social knowledge— "what everybody knows about the world"—without consciously knowing where or when they first learned it. For Williams, cultural forms are historical and material practices, a part of the way people make their lives. As such, communication is part of material lived experience. (Lynn Spigel, introduction to Raymond Williams, Television: Technology and Cultural Form, (1974. Reprint, with an introduction by Lynn

Spigel, NH: Wesleyan University Press, 1992), x. 27 Paul du Gay, Stuart Hall, Linda Janes, Hugh McKay and Keith Negus. *Doing Cultural Studies: The Story of the Sony Walkman*. (London: Sage Publications, Ltd., 1997; reprinted, 2001), 8. 28 Spigel, introduction to Williams, *Television*, xi.).

Any form of media is not simply a reflection of reality and our perceptions of it, but rather forms of communications are in themselves a major way in which reality is continually formed and changed. For their part, Paul du Gay and Stuart Hall propose that when examining media technologies culturally, “one should at least explore how it is represented, what social identities are associated with it, how it is produced, and what mechanisms regulate its distribution and use.” Calling this a “circuit of culture,” they argued that it does not matter where on the circuit one starts, as long as the researcher goes around the circle to complete the study. (Ibid., xiv. du Gay, et al. *Doing Cultural Studies*, 3. 31 Ibid., 4. 32 Ibid., 3.)

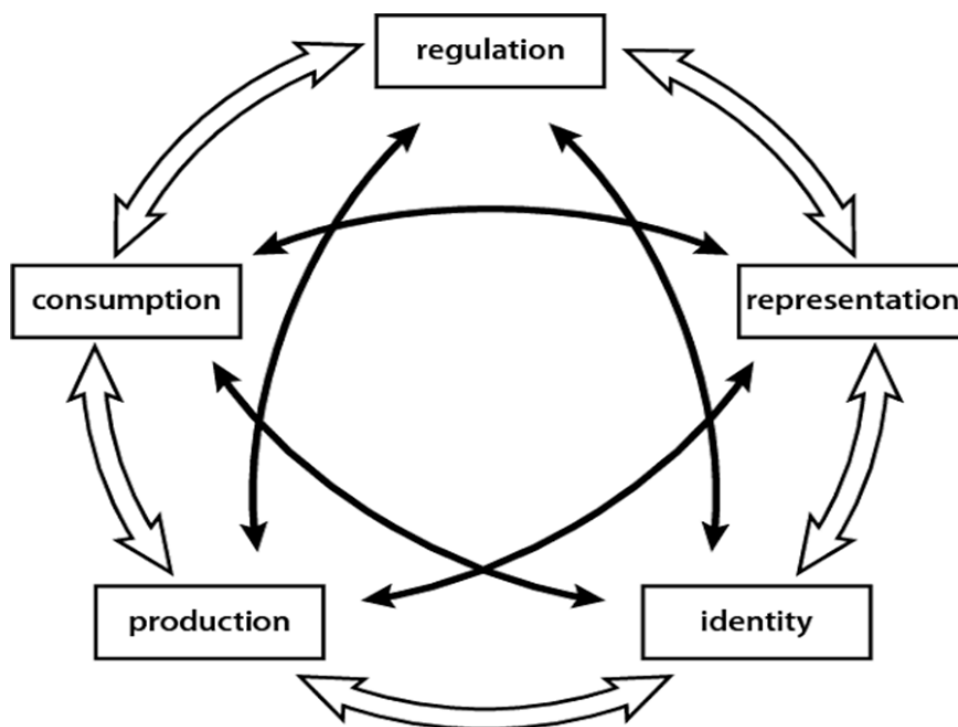


Figure 3: du Gay's Circuit of Culture

Similarly, Stephen Kline, Nick Dyer-Witheford, and Greig de Peuter propose “an integrated analysis of the lockstep dance of technological innovation, cultural diversification, and global consumerism” within the “mediatized global marketplace.” Within the larger circuit of capital composed of production, commodity, and consumption, Kline, et al. distinguished three sub-circuits of culture, technology, and marketing. For Kline, et al., these three sub-circuits are mutually constitutive and can, “in theory, be abstracted and described as semiautonomous moments. In practice, they interpenetrate and dynamize each other.”

Taken together, these two models echo Williams’ belief that “critical media analysis must take account of the dialectical interplay of technologies, culture, and economics.” (Stephen Kline, Nick Dyer-Witheford, and Greig de Peuter. *Digital Play: The Interaction of Technology, Culture, and Marketing*. (Montreal: McGill-Queens’s University Press, 2003), 50. 34 Ibid., 58. 35 Ibid., 28. 36 Lawrence Grossberg, “Can Cultural Studies Find True Happiness in Communication?” *Cultural Studies* Vol. 43 (3) 1993: 90.)

2.7. Theoretical Frameworks of Technology & Society:

It is necessary, therefore, to move towards a discussion of theoretical frameworks which offer a general approach to the study of technology and society, to address the increasing centrality of information networks in daily economic, social, and political life.

Table 2.3: Theoretical Framework

Diffusion Theories	User Acceptance Theories	Decision Making Th. (incl. Problem Solving Theories)	Personality Theories	Organisation Structure Theories
Innovation Diffusion Theory IDT also called Diffusion of Innovation Theory DOI (Rogers 1962)	Theory of Reasoned Action TRA (Ajzen and Fishbein, 1973, 1975)	Rational Choice Theory/ Game Theory	Technology Lifecycle Theory (Rogers, 1962; Moore, 1995)	Disruptive Technology Theory (Bower and Christensen, 1995)
Technology Lifecycle Theory (Rogers, 1962; Moore, 1995)	Theory of Planned Behaviour TPB (Ajzen, 1991)	Decision Making under Uncertainty	Non-technology related approaches are : Social Cognitive Theories SCT (Compeau and Higgins, 1995)	Creative Destruction Theory (Schumpeter, 1912, 1942)

Diffusion Theories	User Acceptance Theories	Decision Making Th. (incl. Problem Solving Theories)	Personality Theories	Organisation Structure Theories
Focus on technology, on the environment and on the using Organisation	Technology Acceptance Model TAM 1; TAM 2 (Davis, 1989) Motivational Model (Vallerand 1997) User Acceptance of Information Technology UTAUT (Vankatesh et al., 2003) Focus on the rational employee interest Users and Gratification approach	Risk Management Change Management Media Richness Theory (Daft and Lengel 1984) Focus on the rational organisational/ management interest	Focus on the individual cognitive interest	Focus on the strategic organisational interest

- Diffusion of Innovation Theory (Rogers, 1962):** It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system.
- Technology Lifecycle Theory (Rogers, 1962; Moore, 1995):** The **technology life cycle** seeks to predict the adoption, acceptance, and eventual decline of new **technological** innovations. The **technology life cycle** has four distinct stages: research and development, ascent, maturity, and decline.
- Theory of Reasoned Action TRA (Ajzen and Fishbein 1973, 1975):** The **theory of reasoned action** (ToRA or **TRA**) aims to explain the relationship between attitudes and behaviours within human **action**. Developed by Martin Fishbein and Icek Ajzen in 1967, the **theory** was derived from previous research in social psychology, persuasion models, and attitude **theories**.
- Theory of Planned Behaviour TPB (Ajzen, 1991):** In psychology, the **theory of planned behaviour** (abbreviated TPB) is a **theory** that links one's beliefs and behaviour. The theory states that intention toward attitude, subject norms, and perceived behavioural control, together shape an individual's behavioural intentions and behaviours.

- e. **Technology Acceptance Model TAM 1; TAM 2 (Davis, 1989)** has been one of the most influential models of technology acceptance, with two primary factors influencing an individual's intention to use new technology - perceived ease of use and perceived usefulness.
- f. **Motivational Model (Vallerand, 1997)** proposed a comprehensive model of motivation which posits that the different motivational types are influenced by a number of social factors. Cooperation makes an activity inherently more interesting whereas competition among students can undermine their intrinsic motivation toward the activity.
- g. **User Acceptance of Information Technology (UTAUT) (Vankatesh et al., 2003)** Unified Theory of Acceptance and Use of Technology (UTAUT) was formulated with four core determinants of intention and usage, and up to four moderators of key relationships.
- h. **Users and Gratification approach-** This grew out of the understanding of why and how people actively seek out specific media to satisfy specific needs as an audience-centred approach to understanding mass communication.
- i. **Theory/ Game Theory: Game theory** is the study of mathematical models of strategic interaction among rational decision-makers.
- j. **Decision Making under Uncertainty:** Decision theory is a calculus for decision-making under uncertainty. It's a little bit like the view we took of probability: it doesn't tell you what your basic preferences ought to be, but it does tell you what decisions to make in complex situations, based on your primitive preferences.
- k. **Risk Management Theory:** The integrated perspective and its application in the public sector.
- l. **Change Management:** ADKAR model or theory of change is a goal-oriented tool or model which makes it possible for the various change management teams to focus on those steps or activities that are directly related to the goals it wants to reach to, and to diagnose and treat the resistance shown by employees towards change.
- m. **Media Richness Theory (Daft and Lengel, 1984):** Media richness theory was introduced in 1984 by Richard L. Daft and Robert H. Lengel. Although media richness theory relates to media use rather than media choice, the empirical studies of the theory have often studied what medium a manager would choose to communicate over, and not the effects of media use.

- n. **Social Cognitive theories:** A model, based on Bandura's Social Cognitive Theory, was developed to test the influence of computer self-efficacy, outcome expectations, affect, and anxiety on computer usage. The model was tested using longitudinal data gathered from 394 end users over a one-year interval. Significant relationships were found between computer self-efficacy and outcome expectations, and between self-efficacy and affect and anxiety and use. Performance outcomes were found to influence affect and use, while affect was significantly related to use. Overall, the findings provide strong confirmation that both self-efficacy and outcome expectations have an impact on an individual's affective and behavioural reactions to information technology.

2.8. Popularity of Mobile Phones & Government Schemes:

While the opening of the market and technological advances have paved the way for more access to mobile phone technology, two important innovations that came with the introduction of mobile phones are SMS or text messaging. For Mendes et al., this was the “killer application” that “helped make the GSM platform dominant in the market.” Second, the introduction of prepaid cards (Jack Linchuan Qiu, Working Class Network Society: Communication Technology and the Information Have-Less in Urban China. (Cambridge, MA: MIT Press, 2009), 123. 278 Ibid., 17.) allowed those without a permanent address, credit history, and employment to purchase mobile phones. This made mobile phones affordable for the majority who belong to lower income brackets. Before the introduction of prepaid mobile phones, those in the lower middle class and the poor were left out of any real access to ICTs. Goggin points out that “prepaid phone cards coupled with cheap phones (a consequence of mass diffusion, competition in manufacturing and provision, as well as technical and design advances) have seen the widespread use of mobiles by people on low incomes.” (Gerard Goggin, “The Mobile Turn in Universal Service: Prosaic Lessons and New Ideals.” Info. Vol. 10 No. 5/6 (2008): 47.)

Poverty reigns over people as a sizeable proportion of people are still living beneath the poverty line whose indispensable necessities are even hard to be met. In order to rescue people from their vulnerability and pathetic conditions as well as their inclusion into the mainstream society where everybody lives with minimum or enough comforts, the

government initiated various schemes including PDS service, free healthcare through public and private hospitals, free and mandatory education for children, and so on. Likewise, the programme 'Digital India'⁷ was initiated by the Central government, under which all government institutions and services should be computerised and driven by e-Governance.

The concept of e-Governance was initiated in the mid-90s with an unyielding focus on 'citizen-centric' service. Subsequently, many States and Union Territories also pursued this approach to promote e-Governance in their administration, which resulted in the implementation of multiple e-Governance projects in those States. An erstwhile report has shown that this attempt has not made any significant impact on people's lives as what the government has really anticipated. In this procedure, the Government of India commenced a National e-Governance plan (NeGP) in 2006 and launched 31 mission mode projects to cover various domains. As part of enhancing this computerised service, the Government of India has launched a programme entitled 'Digital India Programme'.

There is much earlier literature concentrated on 'Digital India' and its programmes. Generally, information and communication technology would play a prominent role in simplifying the access to certain services provided under this scheme. It also enhances this service very effectively. Many erstwhile studies have been carried out on ICT service. For instance, Joshi and Manoj (2012) who studied ICT service in the banking sector have stated that the commercial banks would enlarge their service to the rural area through the adoption of wireless telecommunication resulting in dwindling their operational cost and making their service accessible to local rural masses. Another study carried out by Prasad shows that internet service is to deliver to all remote rural areas under the 'National e-Governance Plan' for promoting e-literacy, capacity building, and also installing ubiquitous broadband-enabled computer kiosks under public-private partnership (2012). The National Telecom Policy 2012⁸ envisages 'leveraging telecom infrastructure to enable all citizens and businesses, both in rural and urban areas, to participate in the internet and web economy. As a result of these constant efforts, there are 673.39 broadband subscribers

⁷<https://digitalindia.gov.in/content/introduction>

⁸National Telecom Policy, 2012. Retrieved from http://www.dot.gov.in/sites/default/files/NTP-06.06.2012-final_0.pdf (last accessed on 6 Oct 2017)

in India by January 31st 2020, which is considered the second highest in the world, as per a report of TRAI⁹.

Total wireless telephone subscriptions are 511.90 million in rural areas with rural teledensity as 57.76%. The key factors of augmentation of this digital service are: 1) young population is continuously growing in engaging with the learning of digital skills, 2) decrease the price of smartphones, and 3) continuously deploying 3G and 4G mobile broadband technologies in developing markets¹⁰. So, this digital governance enables administration and delivering efficient service on time.

India is a nation with 69.8% of the total population lives in rural areas [1]. With such a large rural population, the government is required to make concrete efforts for the development of rural areas. Undoubtedly, the Government of India has made considerable efforts like the Digital India campaign initiated in 2015 to reduce the digital divide and ICT has proved to be a tool for its successful implementation. As per Chambers, rural development is a strategy that enables people to benefit themselves and their families by fetching more of what they need [2]. Singh defines rural development as a process that leads to sustainable improvement in the quality of life of poor people residing in rural areas [3]. Table 1 highlights that even though the percentage of rural population in India is decreasing since the last two decades, still it accounts for a major proportion of the total population. In 1991, the percentage of rural population was 74.3% which was reduced to 72.2% in 2001 and further to 69.9% in 2011. This decrease in the rural population could be understood as an indication that there is a need to provide better facilities in rural areas. It indicates that more people are migrating to urban areas in the past two decades in order to get access to better facilities and services available in cities.

As citizens of rural areas get more educated about convenience, they can derive from the biggest revolution of “internet access” and they will be able to explore more and stay well connected with the growing trends. Rural users, as a percentage of the internet

⁹Telecom Regulatory Authority of India. (2017). Press Release No. 43/2017. Retrieved from http://www.trai.gov.in/sites/default/files/PR_No_43_Eng_13_06_2017.pdf (last accessed on 6 Oct 2017).

¹⁰Ericsson. (2017). Ericsson Mobility Report. Retrieved from <https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-june-2017.pdf> (last accessed on 6 Oct 2017)

population, will rise from 29 per cent in 2013 to 40-50 per cent in 2018. (BCG Analysis, 2015). Mobile internet users are likely to constitute 60-70 per cent of the total online population.

2.9. E-governance (SMART):

Prabhu states that the motto behind e-Governance is to provide SMART (Simple, Moral, Accountable, Responsible and Transparent) government to people. ICT has penetrated into all the sectors of administration in India. In addition, the government is also tirelessly encouraging its people to learn of or to adopt ICT services. As a result of this attempt, there has been a tremendous upswing in digital payment, caused for a shift from a cash-based economy to a card-based economy or mobile transaction economy. A study by NITI Aayog¹¹ shows that the value of digital transactions in 2016-17 has reached out to Rs. 10.9 billion and registering growth is also augmented to 55% along with 49.4% of corresponding growth rate over 2015-16. It further noticed a 74% increase in digital payment as well as an upscale pertaining to the number of points of sales from 1.51 million in October 2016 to 2.62 million in April 2017. There is a growth in payment protection insurance up to 162.5% over 2016-17 as compared to 137.8% over 2015-16, in total digital payments up to 21,41,071 billion, register growth up to 137.8% over 2015-17, immediate payment service (IMPS) up to 153.5% in 2016-17. This growth is also found in other platforms involving Real Time Gross Settlement (RTGS), National Electronics Funds Transfer (NEFT) debit cards, digital wallets, National Electronics Funds Transfer (NEFT), debit cards, digital wallets and Unified Payments Interface (UPI) over a period of October 2016 to April 2017. In this process, the Reserve Bank of India (RBI) has granted licenses to 11 payment banks, 510 small finance banks, and 71 scheduled commercial banks (SCBs). It also opened six banks as payment banks which are meant to provide basic banking benefits to the financially excluded citizens of India.

2.10. Telangana State Initiatives:

As part of Digital India, the Telangana Government has initiated various policies to ensure that the people of the State are digitally empowered. Such policies are as explained below:

¹¹<https://www.pwc.in/assets/pdfs/publications/2017/digital-india-targeting-inclusive-growth.pdf>

2.11. E-Governance:

The government has initiated various programmes to simplify the government services at the optimal quality, time place and cost. There are a few programmes initiated which are as follows:

1. MeeSeva Portal
2. Citizen Service with a Difference e-Seva
3. Telangana State Portal
4. TS Online
5. E-Procurement
6. CFST-Transport Department Services
7. CARD-Computer-aided administration of registration department
8. TSSWAN-TS State Wide Area Network
9. TS State Wide Area Network
10. TS State Wide Video Conference
11. SoFTNET
12. KM-ATOM
13. E-Return-VAT eReturn
14. CDSC-Online Issue of Statutory Forms of CT (Commercial Taxes) Department
15. MGNREGS-Mahatma Gandhi National Rural Employment Guarantee Scheme
16. e-Suvidha-Complete Application for Municipalities
17. Small and Medium Enterprises (SMEs) in e-Governance Projects.

2.12. MeeSeva:

PDS service, free healthcare through public and private hospitals, free and

mandatory education for children, and so on. Likewise, the programme 'Digital India¹²' was initiated by the Central government, under which all government institutions and services should be computerised and driven by e-Governance. The concept of e-Governance was initiated back then in the mid-90s with an unyielding focus on 'citizen-centric' service. Subsequently, many States and Union Territories also pursued this approach to promote e-Governance in their administration, which resulted in implementing multiple e-Governance projects in those States. An erstwhile report has shown that this attempt has not made any significant impact on people's lives as what the government has really anticipated. In this procedure, the Government of India commenced a National e-Governance plan (NeGP) in 2006 and launched 31 mission mode projects to cover various domains. As a part of enhancing this computerised service, the Government of India has launched a programme entitled 'Digital India Programme' with an objective to transform India into a digital empowered society and knowledge economy, in addition to owning three visions such as 1) digital infrastructure as a core utility to every citizen, 2) governance and services on demand, and 3) digital empowerment of citizens¹³.

MeeSeva, which is an ICT-based centre, provides services of a few government departments to dwindle the process of receiving service from the government. Currently, more than 550 services of 40 departments are being catered to more than 35 million population through multiple channels which are explained as a) MeeSeva Centres (more than 4,500 kiosks spread across the State), b) MeeSeva Portal (a web-portal for availing citizen services), and c) Mobile App (would already be launched in 2017). Under this service delivery, ESD does multiple works including transacting amount, location/channel of transaction initiation, time-stamps, etc. Over a period of time, ESD has developed an interactive dashboard entitled "Interactive MeeSeva Dashboard" also known as "MeeSeva Dashboard" which is a powerful tool to drive actions towards achieving several aspects of improved service delivery.

2.13. Methodology & Sampling:

This survey adopted both qualitative and quantitative methods to investigate

¹²<https://digitalindia.gov.in/content/introduction>

¹³<https://digitalindia.gov.in/content/introduction>

research phenomenon, and would also generalise empirical findings across the nation. The data has been segregated into secondary and primary data. As part of procuring secondary data, internet has been considered as a prime source of literature accumulation. It also depended on non-e-resources involving books, journals, and documents of the government. For procurement of data, we approached the Mandal office located in Rajendranagar and the Ministry of Information Technology, Electronics & Communications, Telangana. Though we failed to obtain accurate information from officials and departments concerned, we had been directed to other sources known as non-government organisations. In addition, the relevant information has also been procured from NGOs working on the 'Digital India' programme. One of the prominent NGOs engaged with the Digital India programme is Telangana Information Technology Association (TITA), which usually aims at delivering teaching on digital literate and cashless transactions to people and desires to attain the goals set by the Central government. Its staff elucidated their field-based experience and emphasised their vision of accomplishing their task in accordance with the guidelines and norms of the government. This NGO, until now, has adopted a few villages and are working among different segments of people in the society.

In addition to comprehend people's knowledge on the usage of mobile phones and digital literature, there are four villages in two districts selected - Adilabad district located far away from Hyderabad city and Nalgonda district, located near to the city. The selection of these two districts would aid in understanding how geographical difference determines awareness of digital literacy and mobile usage. These four villages are coequal between these two districts and have been selected to be studied based on three significant criteria including 1) Digital awareness and adoption level, 2) Mission Antyodaya ranking and 3) Availability of IT Infrastructure and Connectivity. These four villages are unequal to each other in terms of different geographical locations, social compositions of people, etc. Regarding geographical differences, Adilabad district, as aforementioned, is located quite far away from Hyderabad while Nalgonda district, where people would have more exposure to different schemes and policies, is located close to Hyderabad city. In Adilabad district, two villages, namely Mukhra and Khandaw villages are selected which was ranked as better-performing village and worst-performing village, respectively, by ranking order of Antyodaya and also the other two criteria.

The location of these villages is also varied. For instance, Mukhra village is located near the headquarters of the district by about 30 kilometres while Khandaw is situated about 50 to 60 kilometres away. Such a difference would not have appeared between Darveshpuram and Telakantigudem villages. Each village is located about 10 kilometres away from the district headquarters. For the selection of respondents in each village, a sample calculator was deployed to select the adequate number of respondents from each village, resulting in 152 respondents sampled in Mukhra village, 144 in Khandaw village, 184 in Telakantigudem village and 196 in Darveshpuram village. Further, these sampled respondents were separated based on gender and age. Both the gender were given equal proration in being selected to be interviewed, as well as each gender was further split into two equal sets based on the two age groups stated above. This study has relied on ODK-tool software in which a questionnaire was made with 62 questions in total. This software-based question made it easier to entertain answers, discard physical questionnaire, and aided in entering the empirical data/information into the MS Excel file online while procuring primary information from the respondents in the field. After the field visit is accomplished, this empirical data was transferred into the SPSS file from the MS Excel file.

Chapter - 3

DIGITAL MEDIA FOR RURAL DEVELOPMENT: A COMMUNICATION STUDY IN REMOTE RURAL TELANGANA



Figure 4: Map of Telangana State with 31 Districts

Table 3.1: The Villages Studied under this Project

District	Mandal	Village	Household	Sampled HH
Adilabad	Ichoda	Mukhra (k)	304	152
	Narnoor	Khandaw	222	144
Nalgonda	Kangal	Telakantigudem	350	184
		Darveshpuram	393	196

The selection process of respondents to be interviewed is done through sampling calculator with a sample calculator of 5 per cent.

3.1. Criteria for selection:

1. Digital awareness and adoption level
2. Mission Antyodaya ranking
3. Availability of IT infrastructure and connectivity

Table 3.2: Criteria for the Selection of GP

S. No.	District	Mandal	Gram Panchayat	Remarks
1	Adilabad	Ichoda	Mukhra	First cashless village in Telangana
2		Narnoor	Khandow	Bottom ranked in Mission Antyodaya survey (Rank 61)
3	Nalgonda	Kangal	Telakantigudem	Improved Digital Literacy and connectivity
4		Kangal	Darveshpuram	Bottom ranked in Mission Antyodaya survey (Rank 62)

3.2. Introduction:

India as a developing country is an aspirant to attain the apex position in all aspects including science and technology, security, maintaining peace and harmony, etc., for a holistic development. Since Independence, the Indian government is carving diverse policies and launching manifold schemes for the welfare and empowerment of the people, especially people from the most vulnerable sections. Presently also, poverty reigns over people as a sizeable proportion of people are still living below the poverty line as redefined by the Rangarajan committee. According to it, the new poverty line should be Rs. 32 in rural areas and Rs. 47 in urban areas.

The Rangarajan report has added 93.7 million more to the list of the poor assessed last year as per the Suresh Tendulkar committee formula (<https://www.downtoearth.org.in/news/new-poverty-line-rs-32-for-rural-india-rs-47-for-urban-india-45134>) whose indispensable necessities are even hard to be met. In order to rescue people from their vulnerability and pathetic conditions as well as including them in

mainstream society where everybody lives with minimum or enough comforts, the government initiated various schemes including PDS service, free healthcare through public and private hospitals, free and mandatory education for children and so on. Likewise, the programme 'Digital India' was initiated by the Central government, under which all government institutions and services should be computerised and driven by e-Governance.

3.3. The Concept:

The concept of e-Governance was initiated back then in the mid-90s with a focus on 'citizen-centric' service; subsequently, many States and Union Territories also pursued this approach to promote e-Governance in their administration, resulting in the implementation of multiple e-Governance Projects in those States. The Working Group on e-Government in the Developing World had identified five broad categories of goals commonly pursued for e-government.

- Creating a better business environment.
- Customers online, not in line.
- Strengthening good governance and broadening public participation.
- Improving the productivity and efficiency of government agencies.
- Improving the quality of life for disadvantaged communities.

An erstwhile report has shown that this attempt has not made any significant impact on the lives of people against the initial anticipation of the government. Therefore, the Government of India commenced a National e-Governance Plan (NeGP) in 2006 and launched 31 mission mode projects to cover various domains. In 2009, the National e-Governance Division (NeGD) was created by the Ministry of Electronics & Information Technology (MeitY) as an independent business division under the Digital India Corporation {erstwhile Media Lab Asia}. Its role is to support the Ministry of Electronics & Information Technology in programme management and the implementation of e-Governance projects. As a part of enhancing this computerised service, the Government of India has launched the 'Digital India Programme' with an objective to transform India into a digital empowered society and knowledge economy, in addition to owning three visions

such as 1) digital infrastructure as a core utility to every citizen, 2) governance and services on demand, and 3) digital empowerment of citizens.

With this motive, even the Telangana government, after two prominent programmes such as 'Make in India' and 'Clean India', has adopted a programme with objectives, including a) enabling digital empowerment of citizens, b) facilitating digital infrastructure as a utility to every citizen, and c) providing governance & services on demand. On 1st July, the programme was launched in many parts of the State to promote online payment, green pamphlet for agriculturists, promotion of digital literacy, cyber hygiene and cybersecurity, biometric attendance system and Wi-Fi. It consists of two pivots - the supply side and demand side. On the supply side, every person of the State should be provided with digital facility, and it also includes other services such as 1) laying OFC to each household using the water grid trenches, 2) providing 4G services in the entire state, 3) Wi-Fi in major cities and towns, and 4) e-Panchayat Scheme under which a One-Stop Shop (OSS) kiosk will be available in each Panchayat.

On the demand side, this programme focuses on 1) Digital literacy programme under which one member of each household will be taught to become digital literate, 2) School computer literacy programme: To teach every child from Class 6 onwards the basics of computers, 3) Expansion of MeeSeva Services, 4) Converting as many MeeSeva services as possible on the mobile platform and make mobile governance a reality in Digital Telangana and 5) Identifying technology solutions for all government agencies to provide better services to the citizens.

3.4. Data Collection:

As the process of agglomeration of secondary data, internet sources turned out to be a prime source of pedagogy providers, followed by libraries, government agencies and NGOs, respectively. The above-mentioned resources provided secondary data followed by a field survey for primary data collection. In the case of field-based information, Mandal office, and IT, Electronics and Communications department were approached to have an inquiry about the government agencies functioning on this Digital India programme. Later, Telangana Information Technology Association (TITA), an NGO working on digital literacy and cashless transition provided information on its objectives and activities and also the

field-based experiences of its field staff. This NGO primarily works for making people computer literate as per the Central government norms and enhancing cashless transactions among people of all categories.

To collect empirical information, four villages were selected from two districts of the State. Two districts were selected based on criteria of

- geographical location and
- growth rate.

The selection of four villages was done based on three principles including

- Digital awareness and adoption level,
- Mission Antyodaya ranking, and
- Availability of IT infrastructure and connectivity.

Two villages from each district, a better-ranked and a worst ranked as per Mission Antyodaya ranking, were selected for the study. These four villages are Mukhra and Khandaw of Adilabad district, and Telakantigudem and Darveshpuram of Nalgonda district. These villages are dissimilar to each other regarding their geography and people's social identity. For instance, the villages in Adilabad district is geographically located at an interior place of the forest region, even far away from the district headquarters. The distance from headquarters is about 50 kilometres. On the contrary, the villages in Nalgonda district is not isolated; they have urban connectivity and access to proper transportation service and are located just 10 kilometres away from the headquarters.

3.5. Methodology:

The schedule was put on ODK-tool software. It contained 62 questions overall and each question or a set of questions dealt with a specific issue of usage of mobile, access to internet service and awareness about the government apps. These questions were connected and inter-connected in order.

This schedule was pilot tested in Pochampally village with PG students and errors were accordingly removed. Initially, a five-minute WhatsApp video on six different areas of rural development, namely agriculture, transport, business, education, health and entertainment was used to evoke responses. Since the respondents' attention could not be retained to watch the complete video and answer questions posed in the schedule, this quasi-experimental design was dropped. Finally, for finding out the number of respondents to be interviewed, an online sample calculator was used to select accurate sampling proportion from each village. As a result, 152 people were selected randomly from Mukhra village, 183 from Khandaw village, 183 from Telakantigudem village and 196 from Darveshpuram village. This survey has given equal priority to gender and age. In the case of both gender respondents present in a household, the sampling of respondents was purposive and the survey was answered by the female respondent present in the household. Therefore, there is an equal representation to both the gender and two sets of age groups (15 to 35, and 35 and above) selected for the interview. The questions of schedule are coded and decoded in the SPSS data sheet for final analysis. However, while carrying out the analysis, the two villages selected from each district representing extreme shades have been merged to get an average picture. Thus, the final comparison is only between the two districts that represent varying positions as regards to the access and usage of internet facilities.

The objective of the study was grouped under the following questions in the survey.

- 1. Objective: To map out mobile access and use, at a micro level, of select villages of Telangana**
 - a. How many respondents have mobiles?
 - b. What kind of mobiles are they?
 - c. Is there any connection between the usage of smartphone and economic status?
 - d. Is mobile recharge burdensome to them?
 - e. How much time do they devote to the usage of mobile per day?
 - f. Is age and duration of usage of mobile related?
-

- g. Is there any difference among mobile users with regards to their education and occupation?

2. To assess the areas in which internet connectivity has been most useful and to what extent and suggest methods and means as to how internet can be optimally utilised for rural development. The parameters to assess can be at the individual level and stratified group level within the community.

- a. What is the purpose of accessing a mobile phone?
- b. Which category of people, including both age and gender, uses it only for making calls and sending messages?
- c. Which category of people uses it mostly for entertainment?
- d. What kind of social networking sites and videos do they browse/watch?
- e. How much time do they devote to watch or browse such websites per day?
- f. Do they think the mobile phone has changed their lifestyle or simplified the process of receiving the services from the government?

3. To ascertain the role of government (state/central), Panchayats, NGOs, and Local administration in motivating the use of digital/media.

- a. Do they access the MeeSeva centre?
- b. Why do they use this service? (including both gender and age)
- c. Are they facing problems in accessing this service?
- d. What are the reasons for not using this service yet? (if some of them haven't used it yet)
- e. Are they (both gender and age) aware of the recent initiatives of the government for this service?
- f. Do they easily follow biometric service initiated by the government when they avail government schemes and other services?

4. To understand the levels of mobile literacy in both genders and identify gaps therein?

- a. Is there any financial affair that determines the usage of mobile between genders?
-

- b. Is there any difference between males and females in getting education and usage of mobile?
- c. Which gender has more awareness about the usage of different apps launched by the government for rural development?
- d. What are the reasons for the widening of gender gap between males and females in accessing government service and usage of mobile?

3.6. Profile of the Sample:

Table 3.3: Sample size

A total of 676 respondents were interviewed for this study with 296 from Adilabad and 380 from Nalgonda based on a 10% sample drawn from the online calculator.

Adilabad	Nalgonda	Total
296	380	676

Table 3.4: Profile of the Respondents

Variable		Adilabad	Nalgonda	Total
Age	15-25	92 (31.1)	89 23.4%	181 26.8%
	26-35	56 18.9%	101 26.6%	157 23.2%
	36-55	109 36.8%	90 23.7%	199 29.4%
	55 above	39 13.2%	100 26.3%	139 20.6%
	Total	296 (100.0)	380 (100.0)	676 (100.0)
Chi-square value 31.58*				
Gender	Male	148 50.0%	190 50.0%	338 50.0%
	Female	148 50.0%	190 50.0%	338 50.0%
	Total	296 (100.0)	380 (100.0)	676 (100.0)

Contd...

Digital Media for Rural Development: A Communication Study in Remote Rural Telangana

Variable		Adilabad	Nalgonda	Total
Marital Status	Married	226	287	513
		76.4%	75.5%	75.9%
	Unmarried	54	50	104
		18.2%	13.2%	15.4%
	Divorced		4	4
			1.1%	0.6%
	Widow	16	39	55
		5.4%	10.3%	8.1%
	Total	296 (100.0)	380 (100.0)	676 (100.0)
Chi-Square Value 9.47				
Education	Illiterate	118	164	282
		39.9%	43.2%	41.7%
	Primary	61	43	104
		20.6%	11.3%	15.4%
	Secondary	53	80	133
		17.9%	21.1%	19.7%
	Intermediate	36	41	77
		12.2%	10.8%	11.4%
	Graduation	21	42	63
		7.1%	11.1%	9.3%
	Post-graduation	1	3	4
		0.3%	0.8%	0.6%
	Others	6	7	13
		2.0%	1.8%	1.9%
	Total	296(100.0)	380(100.0)	676(100.0)
	Chi-square Value	13.72		

Most of the respondents in the age group of 15-25 and 35-55 were found available to take the survey. The respondents show equitable distribution in gender as in case where both the male and female were available to take the survey, and preference was given to the female. **Hence, the selection of households is random but the selection of respondents is purposive.** About three-fourth of them covered by this study are married, followed by 15.4% unmarried, 8.1% widows and 0.6% divorced. Education levels in both districts show that almost 40% of respondents are illiterate. Adilabad, which is marginally better than Nalgonda, is showing 43% illiterates while the rest of them have pursued different levels of education. Although Nalgonda reportedly has 11% graduates in respondents compared to 7% in Adilabad. Nalgonda is slightly better in terms of having postgraduates and professionally qualified persons. Among the respondents, about 35.1% have completed their education up to school level, followed by 11.4% intermediate, 9.3% graduation, 1.9% of others, and 0.6% of post-graduation. The other options include engineering, B.Ed., nursing, etc.

The following hypotheses were postulated.

H₀: There exists no significant association between the age groups of the sample respondents and the districts (from which the samples are drawn).

H₁: There exists a significant association between the age groups of the sample respondents and the districts (from which the samples are drawn).

As the chi-square value of 31.58 is significant (at 1 per cent level of significance), it can be concluded that the proportions of members in various age groups are not the same in the two districts (samples).

As the chi-square value of 31.58 is significant, it can be inferred that the percentages of respondents in different age groups are different in the two districts.

In the case of marital status, the following hypotheses were framed.

H₀: There exists no significant association between the marital status of the sample respondents and the districts (from which the samples are drawn).

H₁: There exists a significant association between the marital status of the sample

respondents and districts (from which the samples are drawn).

As the chi-square value of 9.47 is not significant, the percentages of sample respondents in different marital groups are not significantly different in the two districts.

In the case of education, the following hypotheses were postulated for testing:

H₀: There exists no significant association between the education levels of the sample respondents and the districts (from which the samples are drawn)

H₁: There exists a significant association between the education levels of the sample respondents and the districts (from which the samples are drawn)

As the chi-square value of 13.72 is not significant, the percentages of respondents in different educational categories do not differ significantly in the two sample districts.

Amongst the literate sample, technically qualified sample resides in both districts.

Table 3.5: Distribution of Education by Higher Qualifications

Education Level of Others	Adilabad	Nalgonda	Total
B.Tech		2	2
B.ED	1	1	2
Engineer		2	2
Nursing	1		1
PhD		1	1
Pol tech	1		1
TTC	3	1	4
Total	6	7	13

Table 3.6: Distribution of Households by Occupation

Occupation	Adilabad	Nalgonda	Total
Farmer	190	65	255
	64.2%	17.1%	37.7%
Labour	39	165	204
	13.2%	43.4%	30.2%
Govt. Employee	3	3	6
	1.0%	0.8%	0.9%

Contd...

Occupation	Adilabad	Nalgonda	Total
Private Employee	13	31	44
	4.4%	8.2%	6.5%
Business	9	23	32
	3.0%	6.1%	4.7%
Housewife/Handicap/Aged	3	47	50
	1.0%	12.4%	7.4%
Student	32	32	64
	10.8%	8.4%	9.5%
Unemployed	7	14	21
	2.4%	3.7%	3.1%
Total	296	380	676
	100.0%	100.0%	100.0%
Chi-square value	180.68*		

As per employability, the sample may be segregated into two categories - earners and non-earners. Earners involve farmers, labour, government employees, private employees and businessmen. Non-earners include unemployed people, students and housewives/handicap/aged. A larger number of them are involved in farming as farmers (37.7%), followed by 30.2% as labourers. Regarding the non-earners category, this survey has covered 9.5% of students, 7.4% of housewives/handicap/aged and 3.1% of unemployed.

The following hypotheses were set for testing:

H_0 : There exists no significant association between the occupation of the sample respondents and the districts (from which the samples are drawn)

H_1 : There exists a significant association between the occupation of the sample respondents and the districts (from which the samples are drawn)

From the table, the chi-square value works out to 180.7 which is significant and this shows that the occupational pattern of the sample respondents significantly differs in the two sample districts.

Therefore, a huge sample of 64% of farmers from Adilabad and 43% of labourers from Nalgonda comprise the sample. As the chi-square value is above 180.68, there is an association between the occupation and district as the underdeveloped district has more farmers (Adilabad) than the developed district (Nalgonda).

Table 3.7: Total Members in the Households

District	1-4 Members	>=5 Members	Total	Household size	t-value
Adilabad	160(54.1%)	136(45.9%)	296(100%)	4.7	6.20*
Nalgonda	281(73.9%)	99(26.1%)	380(100%)	3.9	0.87
Total	441(65.2%)	235(34.8%)	676(100%)	4.3	3.71*

The analysis regarding the household size of the sample households in two districts shows that Adilabad records a larger family size of 4.7 and this is higher by 0.8 on an average per household when compared to Nalgonda.

Households in Nalgonda have a small family of three members as average whereas the average for Adilabad is five members mostly among the tribal people.

Table 3.8: Total Family Income (Monthly)

Total Family Income (in Rs.)	Adilabad	Nalgonda	Total
1000-5000	262	228	490
	88.5%	60.0%	72.5%
5001-10000	28	125	153
	9.5%	32.9%	22.6%
10001-15000	3	9	12
	1.0%	2.4%	1.8%
15001-20000	2	12	14
	0.7%	3.2%	2.1%
20001-25000	1	1	2
	0.3%	0.3%	0.3%
More than 25,000		5	5
		1.3%	0.7%
Total	296	380	676
	100.0%	100.0%	100.0%
Chi-square value	67.83*		

The following hypotheses were postulated.

H_0 : There exists no significant association between the family incomes of the sample respondents and the districts (from which the sample are drawn)

H_1 : There exists a significant association between the family incomes of the sample respondents and the districts (from which the sample are drawn)

The computed value of chi-square statistic in this regard is 67.8 which is significant at 1 per cent level, the implication being that the percentages of respondents in different income brackets do differ significantly between the two study districts. Further, a cursory glance shows that in tune with the development of Nalgonda district (in comparison to Adilabad), the sample respondent households reported higher incomes than their sample counterparts of Adilabad district.

Table 3.9: Distribution of Households Possessing Assets

Assets	Adilabad	Nalgonda	Total
House	296 (100)	374 (98.4)	670
Land	264 (89.2)	286 (75.3)	550
Livestock	74 (25.0)	97 (25.5)	171
Others (Bike, Auto, Car and Tractor)	23 (7.8)	148 (38.9)	171

Based on the above data, it is evident that house is commonly owned by sample respondent households in both the districts except for a small group comprising a minuscule percentage (1.6 points) in Nalgonda district. Land ownership is more in Adilabad (89.2%) compared to Nalgonda (75.3%). About 25% of the respondents from both districts owned livestock. But vehicle ownership pattern is seen to be in favour of Nalgonda (As high as two-fifths of the sample households possess a vehicle while the corresponding figure for Adilabad is not even one-tenth).

Table 3.10: Family Monthly Expenditure

District	Family monthly Expenditure (Rs.)			Total
	1000-5000	5001-10000	10001-15000	
Adilabad	277	19		296
	93.6%	6.4%		100.0%
Nalgonda	300	72	8	380
	78.9%	18.9%	2.1%	100.0%
Total	577	91	8	676
	85.4%	13.5%	1.2%	100.0%
Chi-square value				29.81*

In keeping with the relative backwardness of the district, Adilabad has a larger percentage (94 per cent) of households in the lowest expenditure group of Rs. 1000-5000 while the sample in Nalgonda, a developed district, has 80 per cent similar cases. To test whether the expenditure levels (percentages in different expenditure brackets) are the same or different in the study districts, the following hypotheses were framed:

H_0 : No significant association occurs between the sample households' monthly expenditure and the districts (from which the samples are drawn).

H_1 : Significant association occurs between the sample households' monthly expenditure and the districts (from which the samples are drawn).

The analysis shows that the chi-square value in the table shown above works out to 29.8, which is significant at 1 per cent level. This implies that the expenditure levels as indicated by the percentage of households in different expenditure brackets are significantly different in the two study districts.

3.7. Data related to Mobile usage:

Table 3.11: No. of Respondents having Mobile

Having mobile	Adilabad	Nalgonda	Total
Yes	276	252	528
	93.2%	66.3%	78.1%
No	20	128	148
	6.8%	33.7%	21.9%
Total	296	380	676
	100.0%	100.0%	100.0%
Chi-square Value	70.55*		

The above data shows that more respondents in Adilabad (93.2%) own a mobile.

There is a significant association between owning a phone and the development of the area. The following hypotheses are formulated:

H_0 : No significant association exists between the ownership of mobile and the development of the districts (from which the samples are drawn)

H_1 : Significant association exists between the ownership of mobile and the development of the districts (from which the samples are drawn)

The bi-variate table given above provides the cross-classification of respondents on both the variables and the chi-square statistic, which is employed for examining the relationship between the two variables, gives a value of 70.6 which is significant at 1 per cent level. However, there appears to be an inverse relationship in the ownership of mobile phone - the backward district of Adilabad registers higher ownership at 93.2 per cent as compared to the corresponding figure of 66.3 per cent in the developed district of Nalgonda.

Table 3.12: Type of Mobile (Among Those Possessing Mobile)

Having Mobile	Type of Phone	Adilabad	Nalgonda	Total
Yes	Feature Phone	191	169	360
		69.2%	67.1%	68.2%
	Android	85	83	168
		30.8%	32.9%	31.8%
Total		276	252	528
		100.0%	100.0%	100.0%

The above data shows that approximately 70 per cent sample of both districts owns feature phones.

Primarily, 88.5% of respondents from Adilabad and 60% from Nalgonda reported their lowest family income in the range of Rs. 1000-5000. Yet, 93% of respondents own mobile phones from Adilabad compared to 66.3% from Nalgonda. Importantly, out of these, 69.2% approximately own just feature phones.

Table 3.13: Distribution of Households according to Number of Mobile Phones they Possess

Number of Phones	Adilabad	Nalgonda	Total
One Phone	183	173	356
	61.8%	45.5%	52.7%
Two Phones	92	157	249
	31.1%	41.3%	36.8%
Three phones & Above	21	50	71
	7.1%	13.2%	10.5%
Total	296	380	676
	100.0%	100.0%	100.0%
	Chi-square value		18.94*

In Adilabad, 61.8% of the respondents own a single mobile and 31% have two phones but Nalgonda respondents have nearly 45.5% single mobile sets and 41% two sets per household. The significance of 18.94 shows that the developed district of Nalgonda has more phones.

Further, to enable comparison between the two districts on the number of mobiles owned by the sample respondent households, the average number of mobiles is computed which shows that the developed district of Nalgonda has a clear edge over Adilabad, a backward district by 0.23 point on an average. In absolute terms, the actual averages are 1.68 and 1.45, respectively.

Table A: Average No. of Mobiles

District	Mean	N	Sum
Adilabad	1.45	296	430
Nalgonda	1.68	380	637
Total	1.58	676	1067

Table B: Group Statistics

	District	N	Mean	Std. Deviation	Std. Error Mean
Total number of phone	Adilabad	296	1.45	.625	.036
	Nalgonda	380	1.68	.695	.036

Table C: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total number of phones	Equal variances assumed	5.711	.017	-4.334	674	.000	-.224	.052	-.325	-.122

As we are dealing with the sample data, it is necessary to subject them to a test of significance. Independent samples test (t-test) is carried out with the following hypotheses:

H_0 : No significant difference exists in the average number of mobiles owned in the samples from which the samples are drawn

H_1 : Significant difference exists in the average number of mobiles owned in the samples from which the samples are drawn

A significant t-ratio of 4.334 (with 674 degrees of freedom and at 1 per cent level of significance) shows that we reject the null hypothesis, implying that the average number of mobile phones in the two districts differ significantly (verification of actual mean values confirms that Nalgonda is on a better footing as compared to Adilabad district).

Table 3.14: Internet Data Bill

District	Less than Rs. 500	No data bill	No bill	Total
Adilabad	85	210	1	296
	28.7%	70.9%	0.3%	100.0%
Nalgonda	84	291	5	380
	22.1%	76.6%	1.3%	100.0%
Total	169	501	6	676
	25.0%	74.1%	0.9%	100.0%

The analysis in this regard shows that the monthly bill on mobile phones is not exceeding Rs.500 and going by the percentages of respondent households, Adilabad, a backward district, registers a slightly higher figure (28.7 per cent) in comparison with 22.1 per cent in Nalgonda, an advanced district. However, as high as about 70 per cent of respondents in both districts said that they do not pay any data bill.

Table 3.15: Total Monthly Expenditure on Mobile Phone Bill

Amount Rs.	Adilabad	Nalgonda	Total
Less than 500	286	348	634
	96.6%	91.6%	93.8%
500-1000	9	27	36
	3.0%	7.1%	5.3%
No bill	1	5	6
	0.3%	1.3%	0.9%
Total	296	380	676
	100.0%	100.0%	100.0%

Be it for internet usage or general usage, a large majority of the sample in both the districts reported monthly expenditure less than Rs.500. (If we look at internet usage, the respondents that fall in Rs.500 expenditure group is 28 per cent in Adilabad and about 21 per cent in Nalgonda).

Usage of Mobile

More than half of them (71.6% in Adilabad and 79.2% in Nalgonda) engage with their mobiles daily for less than one hour. In addition, it shows that almost all of them spend less than Rs.500 each per month. For usage of internet data, the sample owning smartphone can purchase internet data. In this context, only 24% possess smartphones and hence purchased internet data. The rest of the sample (75%) possessed either feature phones or do not own personal mobiles.

Table 3.16: Distribution of Households According to the Usage of Mobile

S. No.	Using Mobile	Adilabad	Nalgonda	Total
1	Calling	296(100%)	377(99.2%)	673
2	SMS	20(6.8%)	-	20
3	WhatsApp	49(16.6%)	55(14.5%)	104
4	Facebook	34(11.5%)	20(5.3%)	54
5	YouTube	57(19.3%)	67(17.6%)	124
6	Online Banking	49(16.6%)	28(7.4%)	77
7	News Channel	37(12.5%)	4(1.1%)	41
8	Online Games	6(2.0%)	5(1.3%)	11
9	Govt. Schemes	5(1.7%)	-	5
10	Education	2(0.7%)	-	2
11	Email	--	--	--

As per the analysis given in Table 3.16, it is clear that in the usage of mobile, apart from 'calling', Adilabad emerges relatively to be more versatile and diverse. A segment of the sample in this district is using mobile for accessing government schemes, education and SMS service. The Nalgonda sample does not access the above.

Table 3.17: Time Duration of Mobile Use Per Day

District	Less than one hour	One hour and More	Total
Adilabad	212	84	296
	71.6%	28.4%	100.0%
Nalgonda	301	79	380
	79.2%	20.8%	100.0%
Total	513	163	676
	75.9%	24.1%	100.0%

As is evident from Table 3.17, the 'modal' duration for which the phone is used is less than an hour a day in both districts. However going by the exact percentages shown in the table, the sample of Nalgonda, a developed district, slightly lags behind its counterparts in Adilabad district (28.4 per cent in Adilabad and 20.8 per cent of respondents in Nalgonda fall in 'one hour and more' use category).

Based on the tables above, it is established that despite both districts having no significant differences in education, marital status, monthly expenditure on mobile, there are significant differences in age, family income and occupation and mobile ownership, the pattern of usage. Nalgonda sees no difficulty in access yet mobile user ship pattern is limited.

Table 3.18: Whether the Mobile is Used for Online Banking

District	Yes	No	Total
Adilabad	52	244	296
	17.6%	82.4%	100.0%
Nalgonda	34	346	380
	8.9%	91.1%	100.0%
Total	86	590	676
	12.7%	87.3%	100.0%
Chi-square value	11.13**		

The above data shows that 17.6 per cent of the sample population in Adilabad access online banking whereas only 8.9 per cent sample of Nalgonda access online banking. Chi-square statistic is employed for examining whether the association between the two variables is significant in the samples from which the samples are drawn. The hypotheses are as follows:

H₀: No significant association exists between accessing online banking through mobile and the district (from which the samples are drawn)

H₁: Significant association exists between accessing online banking through mobile and the district (from which the samples are drawn).

As per the analysis, the chi-square value of 11.13 is significant at 1 per cent level which shows that the phenomenon of accessing online banking does have a significant association with the development of the area the respondents come from. But a glance at the actual percentages in Table 3.18 shows that the backward district of Adilabad is in the lead as compared to Nalgonda.

Table 3.19: Mode of Mobile Banking Payment

District	Paytm	Paytm and Others	None (Qualify non-response)	Total
Adilabad	50	2	244	296
	16.9%	0.67 %	82.4%	100.0%
Nalgonda	10	24	346	380
	2.6%	6.31%	91.1%	100.0%
Total	60	26	590	676
	8.9%	3.84 %	87.3%	100.0%

The analysis of the data given in Table 3.19 reveals that Paytm is the more popular means of transaction online.

About 17.6% sample in Adilabad and 8.9% in Nalgonda owning mobile are doing online banking and are using Paytm which was found to be more popular. Besides Paytm, users of online banking are relying on the debit card, Google Pay, BHIM, internet banking, and RuPay. It further noticed that 7.1% of respondents are accessing this service for one-two year and 4.3% for six months to one year.

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Table 3.20: Type of Payments Usually Made

S. No.	Indicators	Adilabad	Nalgonda	Total
1	Payment of Bills	48	6	54
2	Online Purchase	13	1	14
3	Booking bus/train ticket	11		11
4	Transfer money to friends and family	2	5	7
5	Others	1	0	1

As per the above data, bills are mostly paid by using the online banking system. The frequency above shows that such respondents are more in Adilabad than in Nalgonda.

Table 3.21: Period of Accessing Paytm and Other Services by Mobile

District	Less than 6 months	6 months to less than one year	One year to less than two years	Two years and +	None	Total
Adilabad	4	9	36	3	244	296
	1.4%	3.0%	12.5%	1.0%	82.1%	100.0%
Nalgonda	3	20	11		346	380
	0.8%	5.3%	2.9%		91.1%	100.0%
Total	7	29	48	3	590	676
	1.0%	4.3%	7.1%	0.4%	87.1%	100.0%

The above data shows that about 12.5 per cent of the sample are online service users for a period of more than one year. Of late, Nalgonda (5.3%) sees a spurt in using these services through mobile in the last six months.

Table 3.22: Whether Faced Any Difficulties with Regard to Usage of Mobile

District	Yes	No	Not related	Total
Adilabad	137	56	103	296
	46.3%	18.9%	34.8%	100.0%
Nalgonda		380		380
		100.0%		100.0%
Total	137	436	103	676
	20.3%	64.5%	15.2%	100.0%

The above data shows that Adilabad (46.3%) has been facing difficulties, particularly network related issues while accessing mobile whereas Nalgonda does not face any such problems.

Table 3.23: The Difficulties Faced by Users

District	Signal problem	Data purchase and lack of shops	Total
Adilabad	135	2	137
	98.5%	1.5%	100.0%
Nalgonda	-	-	-
	--	--	--
Total	135	2	137
	98.5%	1.5%	100.0%

The above data shows that difficulties in the form of signal problem are most predominant while using mobile.

Table 3.24: Whether the Households have Trust in Digital Transaction

District	Yes	No	Total
Adilabad	55	241	296
	18.6%	81.4%	100.0%
Nalgonda	76	304	380
	20.0%	80.0%	100.0%
Total	131	545	676
	19.4%	80.6%	100.0%
Chi-square value	0.21		

The following hypotheses are proposed for testing:

H₀: No significant association exists between the development of the district and having trust in digital transaction.

H₁: Significant association exists between the development of the district and having trust in digital transaction.

From the analysis, it is clear that the trust in digital transaction is independent of the development of the district. (Value of chi-square statistic, 0.21, is not significant at 5 per cent level). It can be further inferred that not more than one-fifth of the sample of both districts have trust in digital transaction.

Table 3.25: Reasons for No Trust in Digital Transaction

S. No.	Indicators	Adilabad	Nalgonda	Total
1	Not aware of how to use it	147	117	264
2	Language problem	211	231	442
3	Something may go wrong in online payment	46	5	51
4	Poor internet in my village	212	1	213
5	Others	101	184	285

As per the above data, it is clear that lack of awareness and language poses major challenges for digital transaction. Adilabad respondents have also complained about the connectivity and signal problems in the area. Nalgonda does not face accessibility issues, yet a very meagre proportion of sample trusts digital transaction.

Table 3.26: Awareness of MeeSeva Centre (Common Service Centre)

District	Yes	No	Total
Adilabad	283	13	296
	95.6%	4.4%	100.0%
Nalgonda	289	91	380
	76.1%	23.9%	100.0%
Total	572	104	676
	84.6%	15.4%	100.0%
Chi-square value	48.88*		

Based on the data above, it is observed that the respondents in Adilabad are more aware of MeeSeva centres. The following hypotheses were proposed:

H₀: No significant association exists between the development of the district and awareness of MeeSeva centres in the population.

H₁: Significant association exists between the development of the district and awareness of MeeSeva centres in the population.

In this case too, a reverse association is found between the development of the district and awareness of MeeSeva centre - Backward district of Adilabad registers a higher incidence than Nalgonda on the dimension in question (Chi-square value 48.9 is significant at 1 per cent level).

Table 3.27: No. of Respondents Who Visited MeeSeva Centre

District	Yes	No	Total
Adilabad	276	7	283
	97.5%	2.5%	100.0%
Nalgonda	213	76	289
	73.7%	26.3%	100.0%
Total	489	83	572
	85.5%	14.5%	100.0%
Chi-square value	65.42*		

From the above table, it is clear that 97.5 per cent of sample respondents (who reported to be aware of MeeSeva centres) have visited MeeSeva centres whereas, in Nalgonda, the corresponding figure is 73.7 per cent. To test whether these trends apply to the populations from which the samples are drawn, the chi-square test is carried out with the following hypotheses.

H₀: No significant association exists between the visits to the MeeSeva centre and the development of the district (in the populations from the samples are drawn).

H₁: Significant association exists between the visits to MeeSeva centre and the development of the district (in the populations from the samples are drawn).

The test shows that the chi-square statistic yields a value of 65.42 which is significant at 1 per cent level and this implies that the null hypothesis is rejected in favour of the alternative hypothesis. The inference from this result is that those who are aware of the MeeSeva centre are visiting in large numbers and between the two districts; the backward district of Adilabad is well ahead of Nalgonda district, a developed one.

Table 3.28: Purpose of Visiting the Centre

Indicators	Adilabad	Nalgonda	Total
For Aadhaar (enrolment)	185(67%)	76(35.7%)	261(53.4%)
Getting Certificates	65(23.6%)	22(10.3%)	87(17.8%)
Land Documents	35(12.7%)	21(9.9%)	56(11.5%)
Pension	6(2.2%)	2(0.9%)	8(1.6%)
Others (Electricity and Other Bill payments)	49(17.8%)	60(28.2%)	76(22.3%)
Total	276(100%)	213(100%)	489(100%)

The purposes of visit to the centre could be multiple in nature and Table 3.28 puts them (the purposes) in order. Independent of the district, 'Aadhaar enrolment' emerges as the major purpose, followed by 'getting certificates'. The other purposes of the visit include receiving pensions, land documents, payments of electricity bills, etc.

Table 3.29: Knowledge of How to Use MeeSeva App

District	Yes	No	Total
Adilabad	10	286	296
	3.4%	96.6%	100.0%
Nalgonda	2	378	380
	0.5%	99.5%	100.0%
Total	12	664	676
	1.8%	98.2%	100.0%

From the analysis presented in Table 3.29, it is clear that the level of awareness about the MeeSeva app is very minimal in Adilabad (3.4 per cent and Nalgonda (0.5 per cent).

Table 3.30: Whether the Households Use Mobile for Entertainment

District	Yes	No	Total
Adilabad	105	191	296
	35.5%	64.5%	100.0%
Nalgonda	44	336	380
	11.6%	88.4%	100.0%
Total	149	527	676
	22.0%	78.0%	100.0%
Chi-square value	55.28*		

H₀: The purpose of using mobile for entertainment by the households is independent of the development of the district.

H₁: The purpose of using mobile for entertainment by the households is dependent upon the development of the district.

The hypotheses are tested using the chi-square statistic which yields a value of 55.3 (significant at per cent level) and this shows that using the mobile by the household for the purpose of entertainment does depend upon the development of the district, but with a tag - a reverse association is in evidence- 35 per cent of Adilabad and 12 per cent of households in Nalgonda reported this phenomenon.

Table 3.31: Mobile for Entertainment: Mostly Listen/Browse/Play

S. No.	Entertainment	Adilabad	Nalgonda
1	Movies	55(52.4%)	37(84.1%)
2	Songs	102(97.1%)	43(97.7%)
3	News	39(37.1%)	2(4.5%)
4	Games	11(10.5%)	0
	Total	105(100%)	44(100%)

Most of the sample (97%) from both districts using mobile for entertainment purposes choose to tune into songs followed by watching movies. Nalgonda has a larger sample (84%) watching movies online than Adilabad (52.4%). The major difference in usage in districts is seen as the Adilabad sample consumes news online (37%) compared to a small 4.5 per cent sample of Nalgonda and is also involved in gaming (10.5%) which is not the case with Nalgonda.

Table 3.32: Time Allocated for Entertainment Per Day

District	Less than one hour	Less than 2 hours	Less than 4 hours	Less than 6 hours	Less than 10 hours	More than a half day	None	Total
Adilabad	47	59	6	1			183	296
	15.9%	19.9%	2.0%	0.3%			61.8%	100.0%
Nalgonda	11	33	7		3	2	324	380
	2.9%	8.7%	1.8%		0.8%	0.5%	85.3%	100.0%
Total	58	92	13	1	3	2	507	676
	8.6%	13.6%	1.9%	0.1%	0.4%	0.3%	75%	100.0%

The above data establishes that most samples of Adilabad (61.5%) are not using mobile daily for entertainment purpose. Yet, the sample using mobile for entertainment in Adilabad district shows diverse uses as established from Table 3.32. In Nalgonda, the sample population (27.1%) claims that they do not use mobile for entertainment everyday.

Table 3.33: Whether the Mobile Simplified the Service Accessing Process

District	Yes	No	Total
Adilabad	266	30	296
	89.9%	10.1%	100.0%
Nalgonda	166	214	380
	43.7%	56.3%	100.0%
Total	432	244	676
	63.9%	36.1%	100.0%
Chi-square value	153.84*		

The above data shows that 89.9 per cent sample of Adilabad agree that mobile has simplified the process of getting services from the government/ NGO sector.

The following hypotheses were proposed:

H₀: The endorsement that mobile has simplified the service accessing process is independent of the development of the district

H₁: The endorsement that mobile has simplified the service accessing process depends upon the development of the district

A significant chi-square (with a value of 153.8) implies that the null hypothesis is rejected in favour of the alternative hypothesis, the implication being that the type of the district does determine the simplification of the service accessing process by mobile. However, in this case, a negative trend is in evidence- the backward district of Adilabad is at a much higher level in relation to the developed district of Nalgonda.

Table 3.34: How Mobile Facilitates Getting Services from Govt/NGO

Indicators	Adilabad	Nalgonda	Total
Getting work done quickly/easily	19 (7.1%)	-	19 (7.1%)
Availing such service from home self	11 (4.1%)	-	11 (4.1%)
To reduce time	13 (4.9%)	-	13 (4.9%)
To cut off visiting various departments concerned	6 (2.3%)	-	6 (2.3%)
Other	1 (0.4%)	-	1 (0.4%)

The above data shows that response was received mostly from Adilabad sample whereas this question does not apply to Nalgonda respondents as they are not using mobile for accessing services as such.

3.8. E-Governance and Government Apps Usage:

Table 3.35: Whether Used Biometric System to Access Government Benefits

District	Yes	No	Total
Adilabad	257	39	296
	86.8%	13.2%	100.0%
Nalgonda	326	54	380
	85.8%	14.2%	100.0%
Total	583	93	676
	86.2%	13.8%	100.0%
Chi-square value	0.15		

The above data shows that nearly 86 per cent sample is using the biometric system to access government benefits. The following hypotheses were proposed:

H₀: The use of biometric system to access government benefits is independent of the development of the district

H₁: The use of biometric system to access government benefits is dependent upon the development of the district

The null hypothesis postulated cannot be rejected as the result of the chi-square test (0.15) applied to the data in Table 3.36 is not significant, which means that both the districts are showing similar response as far as the use of biometric system for accessing the government benefits is concerned (around 85 per cent of respondents of both districts reported using biometric system for accessing the benefits extended by the government.

Table 3.36: Application of Biometric System

Benefit	Adilabad	Nalgonda	Total
Old Age Pension Scheme	20(7.8%)	47(14.4%)	67(11.5%)
MGNREGS	208(80.9%)	215(66%)	423(72.6%)
PDS	163(63.4%)	291(89.3%)	454(77.9%)
Others	17(6.6%)	25(7.7%)	42(7.2%)
Total	257	326	583

Note: Percentages in the parentheses are according to the column total HH.

From the above data, most of the biometric usage in Adilabad is for drawing benefits through MGNREGS whereas, the maximum sample in Nalgonda claims to have used biometric access in connection with PDS.

Table 3.37: Finding Biometric Process Easy

District	Yes	No	Total
Adilabad	256	1	257
	99.6%	0.4%	100.0%
Nalgonda	322	4	326
	98.8%	1.2%	100.0%
Total	578	5	583
	99.1%	0.9%	100.0%

The cross-classification of the sample respondents of both the districts on 'whether they find the biometric process easy' results in a skewed distribution - as high as 86 per cent of respondents of both districts find biometric access easy.

Table 3.38: Difficulty in Using Biometric Access

Indicators	Adilabad	Nalgonda	Total
Internet Access Problem	1	0	1
Imprint of Fingers	0	4	4
It is not Properly catching	-	0	1
Total	1	4	5

In a handful of cases in both districts, some difficulties in getting biometric access are recorded and they include not having internet access, imprint of fingers not matching, etc.

Table 3.39: Whether Aware of Any Apps Launched by Government for Public Use

District	Yes	No	Total
Adilabad	83	213	296
	28.0%	72.0%	100.0%
Nalgonda	7	373	380
	1.8%	98.2%	100.0%
Total	90	586	676
	13.3%	86.7%	100.0%

As shown in Table 3.39, Adilabad district exhibits a larger awareness level (as reflected in respondents who said yes- 28 per cent) than Nalgonda (1.8 per cent), a developed district. In this case too, the backward district shows a more positive result than the developed one.

Table 3.40: Government Public Usage App- Agricultural App

District	Yes	No	Unaware	Total
Adilabad	53	30	213	296
	17.9%	10.1%	72.0%	100.0%
Nalgonda	2	5	373	380
	0.5%	1.3%	98.2%	100.0%
Total	55	35	586	676
	8.1%	5.2%	86.7%	100.0%

The analysis given in Table 3.40 reveals that Adilabad is more aware (17.9%) of agriculture apps launched by the government than Nalgonda.

Table 3.41: Government Public Usage App- Health App

District	Yes	No	Unaware	Total
Adilabad	2	81	213	296
	0.7%	27.4%	72.0%	100.0%
Nalgonda		7	373	380
		1.8%	98.2%	100.0%
Total	2	88	586	676
	0.3%	13.0%	86.7%	100.0%

As regards the usage of health app of the government, the position is less than encouraging - hardly a couple of respondents in Adilabad reported to be using it while none reported the usage of the app in Nalgonda.

Table 3.42: Government Public Usage App- Educational App

District	No	Unaware	Total
Adilabad	83	213	296
	28.0%	72.0%	100.0%
Nalgonda	7	373	380
	1.8%	98.2%	100.0%
Total	90	586	676
	13.3%	86.7%	100.0%

The awareness level of respondents of the educational app in Adilabad is low at 28 per cent while it is worse in Nalgonda where hardly two per cent are aware of the app.

Table 3.43: Government Public Usage App- Other Apps

District	T Wallet	Paytm	Both T Wallet and Paytm	MGNREGS and Bhuvan app	None	RTC and IRCTC	Total
Adilabad	23	16	13	1	243		296
	7.7%	5.4%	4.4%	.3%	82.1%		100.0%
Nalgonda	3	-	-	-	375	2	380
	.8%				98.7%	.6%	100.0%
Total	26	16	13	1	618	2	676
	3.9%	2.5%	1.9%	.1%	91.4%	.2%	100.0%

Besides the health and educational apps, there are many other apps including T Wallet, Paytm, Bhavan App, etc. But the awareness levels of these apps are very low and relatively speaking, Adilabad, a backward district, is slightly better when compared to Nalgonda.

Table 3.44: Apps Used by Respondents

District	No Answer	mKisan	MGNREGS and Bhuvan apps	T Wallet	mKisan and T Wallet	Paytm	mKisan and Paytm	Aarogyasri app	R and IRCTC	Total
Adilabad	212	28	1	9	14	10	19	2	1	296
	71.6%	9.5%	.3%	3.0%	4.7%	3.4%	6.5%	.7%	.3%	100.0%
Nalgonda	376	2		3					2	380
	99.0%	.5%		0.8					.6%	100.0%
Total	588	30	1	11	14	10	19	2	3	676
	87.1%	4.4%	.1%	1.7%	2.1%	1.5%	2.7%	.3%	.3%	100.0%

With regard to the actual usage of the apps by the sample respondents, mKisan is the most-used app in Adilabad, followed by mKisan and Paytm. But in Nalgonda, the position is different - out of seven respondents who reported using the Apps, three referred to T Wallet and two each to MKisan, and RTC and IRCTC.

Table 3.45: Source of Information about Apps

District	Friends	Govt. Officials	Total
Nalgonda	5	2	7
	71.4%	28.6%	100.0%
Total	5	2	7
	71.4%	28.6%	100.0%

To the question on the source of information about the apps, friends (5), followed by officials (2) are mentioned in Nalgonda while no response was received from any respondent in Adilabad.

Table 3.46: Awareness by Govt/NGO/PRI

District	Awareness meeting	Panchayati Office Notice Board	Total
Adilabad	37	-	37
	100.0%		100.0%
Nalgonda	1	1	2
	50.0%	50.0%	100.0%
Total	38	1	39
	97.4%	2.6%	100.0%

As per the above data, awareness meetings in Adilabad have led to the popularising of the apps. These meetings were organised by officers from Airtel and in some cases through Panchayat. There is a conspicuous absence of any significant role of PRIs in facilitating digital knowledge transaction among the sample.

3.9. Usage of Mobile apps supported by the Government:

Table 3.47: Awareness of Agricultural Apps

District	Yes	No	Total
Adilabad	56	240	296
	18.9%	81.1%	100.0%
Nalgonda	3	377	380
	0.8%	99.2%	100.0%
Total	59	617	676
	8.7%	91.3%	100.0%

The above responses show that respondents in Adilabad (18.9%) have better knowledge of the agriculture app than their counterparts in Nalgonda (0.8%). Yet, the majority of the sample in both districts lacks awareness, and efforts need to be put in to popularise the relevant apps.

Table 3.48: Using the Agricultural App in Mobile

District	Yes	No	Unaware	Total
Adilabad	46	11	240	296
	15.5%	3.7%	80.7%	100.0%
Nalgonda	3		377	380
	0.8%		99.2%	100.0%
Total	49	11	616	676
	7.2%	1.6%	91.1%	100.0%

The above data shows that 15.5 per cent sample in Adilabad are using the mobile app for agriculture purpose. They usually access MKisan app as enlisted in the table below.

Table 3.49: Details of Agricultural App Services

District	mKisan	People From Airtel Office Told	None	Total
Adilabad	46		250	296
	15.5%		84.5%	100.0%
Nalgonda	2	1	377	380
	0.5%	0.3%	99.2%	100.0%
Total	48	1	627	676
	7.1%	0.1%	92.8%	100.0%

Table 3.50: Drawing Benefits from the Agricultural App Online Service

District	Yes	No	None	Total
Adilabad	46	9	241	296
	15.5%	3.0%	81.4%	100.0%
Nalgonda	3		377	380
	0.8%		99.2%	100.0%
Total	49	9	618	676
	7.2%	1.3%	91.4%	100.0%

The data on usage of agriculture app reveals that a very meagre sample was aware of the app and hence, only they were drawing benefit from agriculture app. The benefits are limited to knowledge of agriculture practices and weather information. The sample from Adilabad was more aware as compared to Nalgonda as the primary occupation of the sample in Adilabad was farming, yet all farmers were not aware of the app. This shows that there is a need for spreading awareness of relevant apps.

Table 3.51: Getting Benefits from Various Online Sources

District	Adilabad	Nalgonda	Total
Knowledge on Cultivation practices of Crops	46(93.9%)	3(6.1%)	49(100%)
Market information	6(12.2%)	0	6(12.2%)
Weather information	42(85.7%)	3(6.1%)	45(91.8%)
Government subsidy related information	2(4.1%)	0	2(4.1%)
Others	1(2.0%)	0	1(2.0%)

The above data indicates that the entire sample that accesses mobile app on agriculture is deriving benefit from it on the parameters listed above. Hence, awareness is the key to access and deriving benefit.

Table 3.52: Not Been Using (App) But Want to Start Using It

District	Yes	No	Total
Adilabad	197	99	296
	66.6%	33.4%	100.0%
Nalgonda	229	151	380
	60.3%	39.7%	100.0%
Total	426	250	676
	63.0%	37.0%	100.0%

Independent of the districts, 250 respondents forming slightly over one-third of the total sample informed that they were not aware of different APPs, adding that they would like to use it if an opportunity is provided, which is a positive sign. The incidence of willingness in using new APPs is only a shade higher in Adilabad in relation to Nalgonda.

This shows that there is space for NIRDPR in offering tailor-made ToT programmes for the officials at the State level, who in turn, can organise a series of programmes at the district level and below.

Table 3.53: Training Required to Start App Usage

District	Live Demonstration	YouTube	Live Demonstration and YouTube	Group Discussion	YouTube and Group Discussion	No	Total
Adilabad	3	122	7	25	40	99	296
	1.0%	41.2%	2.4%	8.4%	13.5%	33.4%	100.0%
Nalgonda		69	3	115	42	151	380
		18.2%	0.8%	30.3%	11.1%	39.7%	100.0%
Total	3	191	10	140	82	250	676
	0.4%	28.3%	1.5%	20.7%	12.1%	37.0%	100.0%

Adilabad favoured YouTube learning followed by group discussions whereas Nalgonda selected group discussions followed by YouTube videos. The urge to be coached was more in Nalgonda than in Adilabad.

Table 3.54: Wishes to Seek Type of Information Related to Agriculture

Indicators	Adilabad	Nalgonda	Total
Best Practices for different crops	194(65.5%)	229(60.3%)	423(62.6%)
Market information from nearby markets	132(44.6%)	110(28.9%)	242(35.8%)
Government schemes and subsidies information	48(16.2%)	48(12.6%)	96(14.2%)
Contact information of agri experts	1(0.3%)	1(0.3%)	2(0.3%)
Others	16(5.4%)	-	16(2.4%)
Total	296(100%)	380(100%)	676(100%)

The above data reveals the training needs analysis to impart knowledge to the sample of both districts. Best practices in agriculture or case-based knowledge are definitely preferred as per the above responses. There is also a clear indicator to read and access market information. This is reflective of a progressive mindset in the sample.

Table 3.55: Awareness of the Aarogyasri App

District	Yes	No	Total
Adilabad	3	293	296
	1.0%	99.0%	100.0%
Nalgonda		380	380
		100.0%	100.0%
Total	3	673	676
	0.4%	99.6%	100.0%

The data reveals very low knowledge of the Aarogyasri app in both districts. Hence, the app was neither used nor any benefits were derived.

Table 3.56: Use of Aarogyasri App

District	No	Total
Adilabad	3	3
	100.0%	100.0%
Total	3	3
	100.0%	100.0%

Table 3.57: Aware of Other APPs/ Online Services from Government

District	Yes	No	Total
Adilabad	61	235	296
	20.6%	79.4%	100.0%
Nalgonda		380	380
		100.0%	100.0%
Total	61	615	676
	9.0%	91.0%	100.0%

The sample from Adilabad (20.6%) reflected better awareness of other online apps from the government compared to Nalgonda. Yet, awareness is limited to a very small percentage of the sample and effort to proliferate apps is reflected once again.

Table 3.58: Name of the Apps/Service

Name other apps	Adilabad	Nalgonda	Total
No answer	235(79.4%)	380(100%)	615 (91.0%)
NREGS and Bhuvan apps	1(0.3%)	0	1(0.1%)
Paytm	26(8.8%)	0	26(3.8%)
T Wallet	33(11.1%)	0	33(4.9%)
Traffic related	1(0.3%)	0	1(0.1%)
Total	296(100%)	380(100%)	676 (100%)

The data shows that T Wallet and Paytm were the most used apps by the respondents in both districts. Accordingly, they have admitted that they derived benefits by using these apps (see table below). Besides, these NREGS and Bhuvan apps were also known to the sample of Adilabad. The table above reflects a highly lackadaisical awareness level in Nalgonda where the sample has clearly said that they were unaware of any app/service and hence unable to name it.

Table 3.59: Getting Benefits from the App or Online Service

District	Yes	No	Not benefited	Total
Adilabad	54	240	2	296
	18.2%	81.1%	0.7%	100.0%
Nalgonda		380		380
		100.0%		100.0%
Total	54	620	2	676
	8.0%	91.7%	0.3%	100.0%

As the awareness level of the app was higher in Adilabad (18.2%), the sample was able to utilise the online service. In contrast, the majority of the sample (91.7%) Nalgonda did not use online service.

Table 3.60: Benefits from Apps

Indicators	Adilabad	Nalgonda	Total
Very quickly accessing to the government service	41(75.9%)	-	41(75.9%)
Not required to stand in queue for such services	11(20.4%)	-	11(20.4%)
No middlemen involvement	2(3.7%)	-	2(3.7%)
No need to get absent to work	1(1.9%)	-	1(1.9%)
It is a simple and easy process	41(75.9%)	-	41(75.9%)
I got so much awareness about the government policies	2(3.7%)	-	2(3.7%)
No answer	2(3.7%)	-	2(3.7%)
Total	54(100%)		54(100%)

Respondents from Nalgonda did not record their responses but the Adilabad sample found quick and easy access to government services through the apps.

3.9. Futuristic Indicators for App usage:

Table 3.61: Suggestions for Improvement of the Apps/Online Services

District	Voice-based information instead of text	Local language and voice-based information instead of text	Local language, voice-based information instead of text and quick response from the call centre	None	Total
Adilabad	22	22	1	242	296
	7.4%	7.4%	0.3%	81.8%	100.0%
Nalgonda	0	0	0	380	380
	0.0%	0.0%	0.0%	100.0%	100.0%
Total	22	22	1	622	676
	3.2%	3.3%	0.1%	92.0%	100.0%

The above data reveals that voice-based messages in the local language were the preferred means of learning by the sample from both districts.

Table 3.62: Desire to Get Awareness of Such apps

District	Yes	No	Not interested	Total
Adilabad	151	58	87	296
	51.0%	19.6%	29.4%	100.0%
Nalgonda	236		144	380
	62.1%		37.9%	100.0%
Total	387	58	231	676
	57.2%	8.6%	34.2%	100.0%

The number of willing learners was more in Nalgonda than Adilabad. The above data reveals the need of the respondents to learn and use apps that may be beneficial for them. This question was asked in a different context and the answers are presented in Table 3.54. The willingness to learn shows their need and receptivity if relevant training is carried out.

Table 3.63: Kind of Training Preference to Learn

District	Demonstration / YouTube	Coaching & demonstration / YouTube	Demonstration / YouTube and group discussion	Coaching, demonstration / YouTube and group discussion	Coaching	None	Total
Adilabad	70	20	22	8	29	144	296
	23.6%	6.8%	7.4%	2.3%	10.8%	48.6%	100.0%
Nalgonda	57	47	2	2	131	141	380
	15.0%	12.4%	0.5%	0.6%	34.5%	37.1%	100.0%
Total	127	67	24	10	163	285	676
	18.8%	9.9%	3.1%	1.5%	24.1%	42.2%	100.0%

As per the above data, Adilabad prefers YouTube the most whereas Nalgonda respondents want to be coached to understand digital learning. About 48.6% of the sample from Adilabad did not desire to take any such training to learn the use of apps. In Nalgonda, about 37.1 per cent of samples did not show any interest in getting training/learning for the use of mobile apps.

A similar question was posed and answered in Table 3.54. The amalgamated result is below:

Table 3.64: Kind of Training Desired

District	Live Demonstration / coaching	YouTube	Group discussion	Not interested	Total
Adilabad	70	122	64	40	296
	23.6%	41.2%	21.6%	13.5%	100.0%
Nalgonda	172	69	69	70	380
	45.3%	18.2%	18.2%	18.4%	100.0%
Total	242	191	133	110	676
	35.8%	28.3%	19.7%	16.3%	100.0%

As per the data above, Adilabad prefers YouTube the most whereas Nalgonda respondents want to be coached to understand digital learning. There are 48.6% of respondents who do not desire to take any such training to learn the use of apps in Adilabad. In Nalgonda, about 37.1 per cent of respondents have not shown any interest in getting training /learning for the use of mobile apps.

3.10. Summarised Data:

As a fallout of the above, the following is the crux of the data.

Table 3.65: District-wise Comparison of Aspects & Their Significance

S. No.	Aspect being dealt with	Result of chi-square Significant/ not significant	District at an advantageous position on the aspect
1	Age	Significant	Nalgonda
2	Marital Status	Not significant	
3	Education	Significant	Nalgonda
4	Occupation	Significant	Adilabad
5	Family income	Significant	Nalgonda
6	Family expenditure	Significant	Nalgonda
7	Having mobile	Significant	Adilabad

Contd...

S. No.	Aspect being dealt with	Result of chi-square Significant/ not significant	District at an advantageous position on the aspect
8	Number of phones per HH	Significant	Nalgonda
9	Mobile used for online banking	Significant	Adilabad
10	Trust in online transaction	Not significant	
11	Awareness of MeeSeva Centre	Significant	Adilabad
12	Visited MeeSeva Centre	Significant	Adilabad
13	Using mobile for entertainment	Significant	Adilabad
14	Mobile simplified service access process	Significant	Adilabad
15	Using biometric system to access govt. benefit	Not significant	

Chapter - 4

CO-RELATION OF VARIABLES

This chapter correlates a few variables significantly connected with each other. Such variables are segregated into two groups - independent and dependent variables. Independent variables include age, gender, marital status, education, occupation and family members whereas dependent variables include the number of phones which a family-owned, total phone bills of the family, the approximate time spent by the respondents on mobile everyday, usage of online banking, verifying whether mobile simplifies the access of various services, entertainment, accessing biometric service, awareness of the government apps, accessing agriculture app, accessing other apps and preferred training to learn of such apps.

4.1. Relationship with Income:

Table 4.1: Whether Usage of Mobile is Influenced by Family Income

District			Have mobile		Total
			Yes	No	
Adilabad	Total family income	1000-5000	245	17	262
			93.5%	6.5%	100.0%
		5001-10000	26	2	28
			92.9%	7.1%	100.0%
		10001-15000	5	1	6
			83.3%	16.7%	100.0%
	Total	276	20	296	
		93.2%	6.8%	100.0%	
Nalgonda	Total family income	1000-5000	134	94	228
			58.8%	41.2%	100.0%
		5001-10000	95	30	125
			76.0%	24.0%	100.0%
		10001-15000	23	4	27
			85.2%	14.8%	100.0%
	Total	252	128	380	
		66.3%	33.7%	100.0%	

In Adilabad, income did not have any role to play in determining the usage of phone – almost equal percentage of respondents from both the lower and higher income groups have phones. However, in Nalgonda district, a larger percentage of respondents belonging to higher income groups use phone than others.

Table 4.2: Whether Family Income Determines the Type of Phone Used

District			Mobile type		Total
			Feature Phone	Android	
Aliabad	Total Family Income	1000-5000	183	62	245
			74.7%	25.3%	100.0%
		5001-10000	8	18	26
			30.8%	69.2%	100.0%
		10001-15000	0	5	5
			0.0%	100.0%	100.0%
	Total	191	85	276	
		69.2%	30.8%	100.0%	
Nalgonda	Total family income	1000-5000	112	22	134
			83.6%	16.4%	100.0%
		5001-10000	51	44	95
			53.7%	46.3%	100.0%
		10001-15000	6	17	23
			26.1%	73.9%	100.0%
	Total	169	83	252	
		67.1%	32.9%	100.0%	

Interestingly, in Adilabad, the majority of the lower income population group were using feature phones as compared to those belonging to higher income brackets. The same inference, as in Adilabad, applies to Nalgonda also.

4.2. Relationship with Age:

Table 4.3: Whether Age Influences the Type of Mobile Used

District		Mobile type			Total
		Feature Phone	Android		
Adilabad	Age	15-25	42	43	85
			49.4%	50.6%	100.0%
		26-35	31	19	50
			62.0%	38.0%	100.0%
		36-55	83	23	106
			78.3%	21.7%	100.0%
		55 above	35	0	35
			100.0%	0.0%	100.0%
	Total		191	85	276
			69.2%	30.8%	100.0%
Nalgonda	Age	15-25	21	34	55
			38.2%	61.8%	100.0%
		26-35	41	33	74
			55.4%	44.6%	100.0%
		36-55	51	14	65
			78.5%	21.5%	100.0%
		55 above	56	2	58
			96.6%	3.4%	100.0%
	Total		169	83	252
			67.1%	32.9%	100.0%

A large majority of the 36-55 age group used feature phones in Adilabad while in Nalgonda, the older group (55 years and above) was found to be more fascinated with a feature phone. Thus, the more aged the people are, the larger is the possibility of using a feature phone.

Table 4.4: Whether the Age Influences Mobile Usage

District			Have mobile		Total
			Yes	No	
Adilabad	Age	15-25	85	7	92
			92.4%	7.6%	100.0%
		26-35	50	6	56
			89.3%	10.7%	100.0%
		36-55	106	3	109
			97.2%	2.8%	100.0%
		55 above	35	4	39
			89.7%	10.3%	100.0%
	Total	276	20	296	
93.2%		6.8%	100.0%		
Nalgonda	Age	15-25	55	34	89
			61.8%	38.2%	100.0%
		26-35	74	27	101
			73.3%	26.7%	100.0%
		36-55	65	25	90
			72.2%	27.8%	100.0%
		55 above	58	42	100
			58.0%	42.0%	100.0%
	Total	252	128	380	
66.3%		33.7%	100.0%		

In both the districts, not much of a variation was found in the percentages of respondents belonging to different age groups using mobile phones. Based on this, it can be concluded that no relationship exists between age and usage of phone. However, in the ownership of phones, Adilabad (93.2 per cent) is ahead of Nalgonda (66.3 per cent).

4.3. Relationship with Education:

Table 4.5: Whether Education Has Any Bearing on the Usage of Mobile

District			Have mobile		Total
			Yes	No	
Adilabad	Education	illiterate	112 94.9%	6 5.1%	118 100.0%
		primary	56 91.8%	5 8.2%	61 100.0%
		secondary	48 90.6%	5 9.4%	53 100.0%
		intermediate	34 94.4%	2 5.6%	36 100.0%
		graduation	20 95.2%	1 4.8%	21 100.0%
		post-graduation	6 85.7%	1 14.3%	7 100.0%
	Total		276 93.2%	20 6.8%	296 100.0%
Nalgonda	Education	illiterate	90 54.9%	74 45.1%	164 100.0%
		primary	33 76.7%	10 23.3%	43 100.0%
		secondary	64 80.0%	16 20.0%	80 100.0%
		intermediate	22 53.7%	19 46.3%	41 100.0%
		graduation	35 83.3%	7 16.7%	42 100.0%
		post-graduation	8 80.0%	2 20.0%	10 100.0%
	Total		252 66.3%	128 33.7%	380 100.0%

In both districts, education does not seem to be a factor that determines the usage of phones. It means that no significant relationship exists between education and owning a mobile (in other words, the incidence of owning a mobile was similar among the lower education and higher education levels)

Table 4.5: Whether Education Influences the Type of Mobile Used

District			Mobile type		Total
			Feature Phone	Android	
Adilabad	Education	illiterate	105	7	112
			93.8%	6.2%	100.0%
		primary	41	15	56
			73.2%	26.8%	100.0%
		secondary	26	22	48
			54.2%	45.8%	100.0%
		intermediate	12	22	34
			35.3%	64.7%	100.0%
		graduation	3	17	20
			15.0%	85.0%	100.0%
	Total	post-graduation	4	2	6
			66.7%	33.3%	100.0%
Nalgonda	Education	illiterate	191	85	276
			69.2%	30.8%	100.0%
		primary	85	5	90
			94.4%	5.6%	100.0%
		secondary	27	6	33
			81.8%	18.2%	100.0%
		intermediate	38	26	64
			59.4%	40.6%	100.0%
		graduation	9	13	22
			40.9%	59.1%	100.0%
	Total	post-graduation	8	27	35
			22.9%	77.1%	100.0%
Adilabad	Education	illiterate	2	6	8
			25.0%	75.0%	100.0%
		primary	169	83	252
			67.1%	32.9%	100.0%
		secondary	85	5	90
			94.4%	5.6%	100.0%
		intermediate	27	6	33
			81.8%	18.2%	100.0%
		graduation	38	26	64
			59.4%	40.6%	100.0%
Nalgonda	Education	illiterate	9	13	22
			40.9%	59.1%	100.0%
		primary	8	27	35
			22.9%	77.1%	100.0%
		secondary	2	6	8
			25.0%	75.0%	100.0%
		intermediate	169	83	252
			67.1%	32.9%	100.0%
		graduation	85	5	90
			94.4%	5.6%	100.0%
Adilabad	Education	illiterate	27	6	33
			81.8%	18.2%	100.0%
		primary	38	26	64
			59.4%	40.6%	100.0%
		secondary	9	13	22
			40.9%	59.1%	100.0%
		graduation	8	27	35
			22.9%	77.1%	100.0%
		post-graduation	2	6	8
			25.0%	75.0%	100.0%
Nalgonda	Education	illiterate	169	83	252
			67.1%	32.9%	100.0%
		primary	85	5	90
			94.4%	5.6%	100.0%
		secondary	27	6	33
			81.8%	18.2%	100.0%
		intermediate	38	26	64
			59.4%	40.6%	100.0%
		graduation	9	13	22
			40.9%	59.1%	100.0%
Adilabad	Education	illiterate	8	27	35
			22.9%	77.1%	100.0%
		primary	2	6	8
			25.0%	75.0%	100.0%
		secondary	169	83	252
			67.1%	32.9%	100.0%
		intermediate	85	5	90
			94.4%	5.6%	100.0%
		graduation	27	6	33
			81.8%	18.2%	100.0%
Nalgonda	Education	illiterate	38	26	64
			59.4%	40.6%	100.0%
		primary	9	13	22
			40.9%	59.1%	100.0%
		secondary	8	27	35
			22.9%	77.1%	100.0%
		intermediate	2	6	8
			25.0%	75.0%	100.0%
		graduation	169	83	252
			67.1%	32.9%	100.0%

Interestingly, in both districts, persons with lower educational qualifications and illiterates were using feature phones than others. In other words, there is a negative relationship between education and using a feature phone. This statement is true of both districts.

4.4. Relationship with Occupation:

Table 4.6: Whether Occupation Determines the Type of Mobile Used

District			Mobile type		Total
			Feature Phone	Android	
Adilabad	Occupation	farmer	135	43	178
			75.8%	24.2%	100.0%
		labour	27	10	37
			73.0%	27.0%	100.0%
		private employee	8	8	16
			50.0%	50.0%	100.0%
		business	2	7	9
			22.2%	77.8%	100.0%
		student	13	14	27
	48.1%		51.9%	100.0%	
	unemployed	6	3	9	
		66.7%	33.3%	100.0%	
Total		191	85	276	
		69.2%	30.8%	100.0%	
Nalgonda	Occupation	farmer	46	17	63
			73.0%	27.0%	100.0%
		labour	78	10	88
			88.6%	11.4%	100.0%
		private employee	13	21	34
			38.2%	61.8%	100.0%
		business	9	11	20
			45.0%	55.0%	100.0%
		student	4	13	17
	23.5%		76.5%	100.0%	
	unemployed	19	11	30	
		63.3%	36.7%	100.0%	
Total		169	83	252	
		67.1%	32.9%	100.0%	

If we examine the relationship between the type of phone and the occupational level of the sample respondents, it is seen that the farmers of Adilabad district and labourers of Nalgonda district emerge as the larger groups having feature phones. We cannot exactly find a negative relationship as a farmer is an omnibus category as the extent of landholding is not known (in case more farmers in the sample are of marginal type, they are as good as labourers only).

Table 4.7: Whether Occupation Could be a Factor that Determines the Usage of Mobile

District			Have mobile		Total
			Yes	No	
Adilabad	Occupation	farmer	178	12	190
			93.7%	6.3%	100.0%
		labour	37	2	39
			94.9%	5.1%	100.0%
		private employee	16	0	16
			100.0%	0.0%	100.0%
		business	9	0	9
			100.0%	0.0%	100.0%
	Total	student	27	5	32
		unemployed	9	1	10
Nalgonda	Occupation	farmer	63	2	65
			96.9%	3.1%	100.0%
		labour	88	77	165
			53.3%	46.7%	100.0%
		private employee	34	0	34
			100.0%	0.0%	100.0%
		business	20	3	23
			87.0%	13.0%	100.0%
	Total	student	17	15	32
		unemployed	30	31	61
	Total		252	128	380
			66.3%	33.7%	100.0%
			78.1%	21.9%	100.0%

By and large, no significant relationship occurs between the occupation of the respondents on one side and usage of the phone on the other in both the States.

4.5. Relationship with Gender:

Table 4.8: Respondents of Which Gender and With What Educational Background are Using Mobile Phone - Adilabad

Gender			Have mobile		Total
			Yes	No	
Male	Education	illiterate	42	1	43
			97.7%	2.3%	100.0%
		primary	32	0	32
			100.0%	0.0%	100.0%
		secondary	32	0	32
			100.0%	0.0%	100.0%
		intermediate	24	0	24
			100.0%	0.0%	100.0%
		graduation	14	0	14
			100.0%	0.0%	100.0%
	Total	post-graduation	2	1	3
			66.7%	33.3%	100.0%
Female	Education	illiterate	70	5	75
			93.3%	6.7%	100.0%
		primary	24	5	29
			82.8%	17.2%	100.0%
		secondary	16	5	21
			76.2%	23.8%	100.0%
		intermediate	10	2	12
			83.3%	16.7%	100.0%
		graduation	6	1	7
			85.7%	14.3%	100.0%
	Total	post-graduation	4	0	4
			100.0%	0.0%	100.0%
	Total		130	18	148
			87.8%	12.2%	100.0%

The cross-tabulation between the educational level of the respondents and the corresponding ownership of mobile phone clearly shows that in the backward district of Adilabad, these two events are independent- in the sense that irrespective of one's educational level, the incidence of owning (number owning as a percentage in the total sample) is the same.

Table 4.9: Respondents of Which Gender and With What Educational Background are Having Mobile Phone - Nalgonda

Gender			Have mobile		Total
			Yes	No	
Male	Education	illiterate	49	10	59
			83.1%	16.9%	100.0%
		primary	26	0	26
			100.0%	0.0%	100.0%
		secondary	48	1	49
			98.0%	2.0%	100.0%
		intermediate	15	3	18
			83.3%	16.7%	100.0%
		graduation	30	1	31
			96.8%	3.2%	100.0%
		post-graduation	7	0	7
			100.0%	0.0%	100.0%
	Total		175	15	190
			92.1%	7.9%	100.0%
Female	Education	illiterate	41	64	105
			39.0%	61.0%	100.0%
		primary	7	10	17
			41.2%	58.8%	100.0%
		secondary	16	15	31
			51.6%	48.4%	100.0%
		intermediate	7	16	23
			30.4%	69.6%	100.0%
		graduation	5	6	11
			45.5%	54.5%	100.0%
		post-graduation	1	2	3
			33.3%	66.7%	100.0%
	Total		77	113	190
			40.5%	59.5%	100.0%

A similar analysis is done in respect of Nalgonda, the developed district, where it is evident that no positive or negative correlation exists between the educational level and owning a mobile phone among males. However, among females, a different conclusion can be drawn from the analysis – no definite trend is discernible from the analysis. However, female respondents with secondary education background were found to be larger in percentage of owning a phone (51.6 per cent).

Among male members in the sample, no significant relationship occurred between education and usage of phones. But among female members, education is a factor to reckon with in determining the usage of phones - the higher the education, the larger is the percentage of members using the phone.

Table 4.10: Gender and Age Group-wise Ownership of Mobile in Adilabad

Gender			Have mobile		Total
			Yes	No	
Male	Age	15-25	47	1	48
			97.9%	2.1%	100.0%
	26-35		26	0	26
			100.0%	0.0%	100.0%
	36-55		57	0	57
			100.0%	0.0%	100.0%
	55 above		16	1	17
			94.1%	5.9%	100.0%
Female	Total		146	2	148
			98.6%	1.4%	100.0%
	Age	15-25	38	6	44
			86.4%	13.6%	100.0%
		26-35	24	6	30
			80.0%	20.0%	100.0%
		36-55	49	3	52
			94.2%	5.8%	100.0%
	55 above		19	3	22
			86.4%	13.6%	100.0%
	Total		130	18	148
			87.8%	12.2%	100.0%

A similar attempt is made in the case educational level of the respondent in respect of the age group of the respondent in order to understand whether the age group of either gender could be a factor that determines the ownership of the phone. The analysis as shown in Table 4.11 confirms otherwise in Adilabad district where the incidence of ownership is seen across different age groups of respondents of either gender almost uniformly.

Table 4.11: Gender and Age Group-wise Ownership of Mobile in Nalgonda

Gender			Have Mobile		Total	
			Yes	No		
Male	Age	15-25	35	3	38	
			92.1%	7.9%	100.0%	
		26-35	56	1	57	
			98.2%	1.8%	100.0%	
		36-55	52	2	54	
			96.3%	3.7%	100.0%	
		55 above	32	9	41	
			78.0%	22.0%	100.0%	
	Total		175	15	190	
			92.1%	7.9%	100.0%	
Female	Age	15-25	20	31	51	
			39.2%	60.8%	100.0%	
		26-35	18	26	44	
			40.9%	59.1%	100.0%	
		36-55	13	23	36	
			36.1%	63.9%	100.0%	
		55 above	26	33	59	
			44.1%	55.9%	100.0%	
	Total		77	113	190	
			40.5%	59.5%	100.0%	

In a developed district like Nalgonda too, the incidence of owning a phone is almost uniform across all the respondents of both genders. But the only difference is that among the male respondents, the incidence of ownership is above 90 per cent mark while among females it hovers around 45 per cent. Thus, the incidence of ownership between male and female respondents in this district varies across educational categories within each gender.

The following tables show how male and female respondents belonging to different educational levels used the mobile phone.

4.6. Relationship with mobile usage:

Table 4.12: Usage of Phone with Calling by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	43	32	32	24	14	3	148
		29.1%	21.6%	21.6%	16.2%	9.5%	2.0%	100.0%
	Female	75	29	21	12	7	4	148
		50.7%	19.6%	14.2%	8.1%	4.7%	2.7%	100.0%
Nalgonda	Male	57	26	49	18	31	7	188
		30.3%	13.8%	26.1%	9.6%	16.5%	3.7%	100.0%
	Female	1						1
		100.0%						100.0%

All were found using mobile phones for making calls.

Table 4.13: Usage of Phone with SMS by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	-	2	2	6	3	1	14
			14.3%	14.3%	42.9%	21.4%	7.1%	100.0%
	Female	-	1	1	3	1		6
			16.7%	16.7%	50.0%	16.7%		100.0%
Nalgonda	Male	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-

Though the incidence of owning a phone is of a larger degree in both the districts, using SMS facility on the phone is awfully low. Out of a sample of 296 in Adilabad district, only 20 respondents (14 males and 6 females) reacted positively to this aspect. The 'modal' educational level of respondents of either gender is intermediate.

While this is the position in regard to a backward district, can we expect more from a developed district of Nalgonda? But as per the analysis, it is 'no'- not even a single respondent of both genders reported using the SMS facility available on phone.

Table 4.14: Usage of Phone with WhatsApp by Education

District		Education						Total
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	
Adilabad	Male	2	4	11	13	9	2	41
		4.9%	9.8%	26.8%	31.7%	22.0%	4.9%	100.0%
	Female		1	2	2	3	0	8
			12.5%	25.0%	25.0%	37.5%	0.0%	100.0%
Nalgonda	Male	1	4	10	7	21	4	47
		2.1%	8.5%	21.3%	14.9%	44.7%	8.5%	100.0%
	Female		1	3	2	1	1	8
			12.5%	37.5%	25.0%	12.5%	12.5%	100.0%

As compared to using the SMS facility, a slightly larger number of respondents of both genders in either district reported to be using the WhatsApp facility available on the phone. District-wise, the number of such respondents is 41 males and 8 females in Adilabad and 47 males and 8 females in Nalgonda. When we probed further to understand the educational level of these respondents, it is seen that the 'modal' educational category is intermediate for males and graduation for females in Adilabad district. But in Nalgonda, a slightly different trend is noticed - graduation is a modal educational category for males and secondary education for females.

Table 4.15: Usage of Phone with Facebook by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	2	3	7	11	8	1	32
		6.2%	9.4%	21.9%	34.4%	25.0%	3.1%	100.0%
	Female				2			2
					100.0%			100.0%
Nalgonda	Male	1	2	4	4	5	3	19
		5.3%	10.5%	21.1%	21.1%	26.3%	15.8%	100.0%
	Female					1		1
						100.0%		100.0%

In relative terms, a slightly larger number of respondents (34 – 32 males and 2 females) in Adilabad district reported to be using Facebook than those in Nalgonda district (20-19 males and 1 female). It is also evident from the table that the modal educational categories for males in the two districts are different- intermediate in Adilabad and graduation in Nalgonda. But no such identification of educational category is possible due to smaller frequencies of females in either district.

Table 4.16: Usage of Phone with YouTube by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	3	5	13	11	7	2	41
		7.3%	12.2%	31.7%	26.8%	17.1%	4.9%	100.0%
	Female	1	5	3	4	2	1	16
		6.2%	31.2%	18.8%	25.0%	12.5%	6.2%	100.0%
Nalgonda	Male	1	6	20	9	19	4	59
		1.7%	10.2%	33.9%	15.3%	32.2%	6.8%	100.0%
	Female	0	1	2	2	2	1	8
		0.0%	12.5%	25.0%	25.0%	25.0%	12.5%	100.0%

Usage of YouTube appears to be relatively of a larger magnitude (57 (41 males and 16 females) in Adilabad district and 67 (59 males and 8 females in Nalgonda)). As regards their educational level, for males in either district, it is 'secondary education- of around 32 per cent - while for females of Adilabad, it is primary. In Nalgonda district, no educational category among females is identified owing to smaller frequency. From these findings, it can be concluded that among those who are using YouTube, a majority is with lower educational background.

Table 4.17: Usage of Phone with Online Banking by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	1	5	7	13	7	2	35
		2.9%	14.3%	20.0%	37.1%	20.0%	5.7%	100.0%
	Female	1	4	3	6			14
			7.1%	28.6%	21.4%	42.9%		100.0%
Nalgonda	Male	2	2	3	17	3		27
			7.4%	7.4%	11.1%	63.0%	11.1%	100.0%
	Female						1	1
							100.0%	100.0%

Using online banking facility for money transactions is gaining momentum even in rural areas also. In our sample, 49 respondents in Adilabad and 28 in Nalgonda fall in this category. When we disaggregate the data gender-wise, it is seen that graduation is the modal educational level for females of Adilabad and males of Nalgonda district while male respondents with intermediate background form a majority in Aliabad district. In Nalgonda, only a single female falls in the online banking-using group.

Table 4.18: Usage of Phone with News Channel by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	1	5	6	5	4		21
		4.8%	23.8%	28.6%	23.8%	19.0%		100.0%
	Female	4	6	2	4			16
			25.0%	37.5%	12.5%	25.0%		100.0%
Nalgonda	Male		1			2	1	4
				25.0%		50.0%	25.0%	100.0%
	Female							

The educational level of sample respondents viewing news channels is presented in Table 4.18 (Only those who watch the news on their phones). In all, 37 respondents from Adilabad and just four respondents from Nalgonda responded positively to this question. As for trends, secondary education is the modal category among both males and females of Adilabad district. But we cannot draw any conclusion for Nalgonda because of the slender number.

Table 4.19: Usage of Phone with Online Games by Education

District		Education						Total
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	
Adilabad	Male	-	2 33.3%	2 33.3%	1 16.7%	1 16.7%		6 100.0%
	Female	-	-	-	-	-	-	-
Nalgonda	Male			1 33.3%		1 33.3%	1 33.3%	3 100.0%
	Female				1 50.0%	1 50.0%		2 100.0%

In the total sample, just six males from Adilabad and three males and two females from Nalgonda played online games using mobile phone. No clear trend emerges from these small numbers - the use of phones for online games appears to be independent of one's educational background.

Interestingly, only the literate population and mostly males among them use it for playing games but some highly educated females in Nalgonda also use it.

Table 4.20: Usage of Phone with Accessing Govt. Schemes by Education

District		Education						Total
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	
Adilabad	Male		2 33.3%	2 33.3%	1 16.7%	1 16.7%		6 100.0%
	Female	-	-	-	-	-	-	-
Nalgonda	Male	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-

Only in the backward district of Adilabad, a handful (just 6 members, all males) of sample respondents with varying educational backgrounds reported to be accessing government schemes. There is a very stark contrast in findings as Nalgonda does not look into government schemes at all. In Adilabad, only males look into it.

Table 4.21: Usage of Phone with Accessing Education by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	-	-	-	-	1	1	2
						50.0%	50.0%	100.0%
	Female	-	-	-	-	-	-	-
Nalgonda	Male	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-
		-	-	-	-	-		

Only a couple of male members, one with graduation and the other with PG qualification use mobile for accessing educational programmes. In the developed district of Nalgonda, not even a single one falls in this group.

Table 4.22: Usage of Phone with Accessing Email by Education

District		Education						
		Illiterate	Primary	Secondary	Intermediate	Graduation	Post-graduation	Total
Adilabad	Male	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-
Nalgonda	Male	-	-	-	-	-	-	-
	Female	-	-	-	-	-	-	-
		-	-	-	-	-		

4.7. Relationship with App usage:

Table 4.23: Whether Used Biometric System

District			Whether used biometric system		Total
			Yes	No	
Adilabad	Gender	male	128	20	148
			86.5%	13.5%	100.0%
	Gender	female	129	19	148
			87.2%	12.8%	100.0%
	Total		257	39	296
			86.8%	13.2%	100.0%
Nalgonda	Gender	male	171	19	190
			90.0%	10.0%	100.0%
	Gender	female	155	35	190
			81.6%	18.4%	100.0%
	Total		326	54	380
			85.8%	14.2%	100.0%

In Adilabad district, the biometric system is used by both male and female respondents in an equal manner but it is not in Nalgonda. In Nalgonda, males seem to have an edge over female counterparts in using the biometric system.

Table 4.24: Apps Used by the Respondents

District			Benefits used so far						Total
				Old age pension, MGNREGA and PDS	Old-age pension and PDS	MGNREGA and PDS	MGNREGA, PDS and others	MGNREGA, PDS and crop loan	
Adilabad	Gender	male	17	2	1	1	1	0	22
			77.3%	9.1%	4.5%	4.5%	4.5%	0.0%	100.0%
	Gender	female	18	0	0	0	1	2	21
			85.7%	0.0%	0.0%	0.0%	4.8%	9.5%	100.0%
	Total		35	2	1	1	2	2	43
			81.4%	4.7%	2.3%	2.3%	4.7%	4.7%	100.0%
Nalgonda	Gender	male	57						57
			100.0%						100.0%
	Gender	female	50						50
			100.0%						100.0%
	Total		107						107
			100.0%						100.0%

Only a handful of people (numbering just nine) in the total sample of Adilabad reported to be using different government apps but in Nalgonda, it is a big cypher.

Table 4.25: Awareness of Govt. Applications

District			Awareness of Govt. applications		Total
			Yes	No	
Adilabad	Gender	male	61	87	148
			41.2%	58.8%	100.0%
	female		22	126	148
			14.9%	85.1%	100.0%
	Total		83	213	296
			28.0%	72.0%	100.0%
Nalgonda	Gender	male	7	183	190
			3.7%	96.3%	100.0%
	female		0	190	190
			0.0%	100.0%	100.0%
	Total		7	373	380
			1.8%	98.2%	100.0%

As far as the awareness of government applications is concerned, the male members of Adilabad are on a better footing than females. But in Nalgonda, both the males and females exhibited almost lack of awareness of government applications.

Table 4.26: Awareness of Agriculture Applications

District			Using agriculture apps			Total
			Yes	No	Unaware	
Adilabad	Gender	male	42	19	87	148
			28.4%	12.8%	58.8%	100.0%
	female		11	11	126	148
			7.4%	7.4%	85.1%	100.0%
	Total		53	30	213	296
			17.9%	10.1%	72.0%	100.0%
Nalgonda	Gender	male	2	5	183	190
			1.1%	2.6%	96.3%	100.0%
	female		0	0	190	190
			0.0%	0.0%	100.0%	100.0%
	Total		2	5	373	380
			0.5%	1.3%	98.2%	100.0%

Table 4.27: Awareness of Health Applications

District			Using health apps			Total
			no	yes	unaware	
Adilabad	Gender	male	60	1	87	148
			40.5%	0.7%	58.8%	100.0%
		female	21	1	126	148
			14.2%	0.7%	85.1%	100.0%
	Total		81	2	213	296
			27.4%	0.7%	72.0%	100.0%
Nalgonda	Gender	male	7		183	190
			3.7%		96.3%	100.0%
		female	0		190	190
			0.0%		100.0%	100.0%
	Total		7		373	380
			1.8%		98.2%	100.0%

Be it agricultural, health or education application, the male respondents of Adilabad are slightly better than the female respondents (of the same district), but in Nalgonda, the position (in regard to usage of any one of the three government applications) leaves much to be desired.

Table 4.28: Awareness of Education Applications

District			Using education app		Total
			no	unaware	
Adilabad	Gender	male	61	87	148
			41.2%	58.8%	100.0%
		female	22	126	148
			14.9%	85.1%	100.0%
	Total		83	213	296
			28.0%	72.0%	100.0%
Nalgonda	Gender	male	7	183	190
			3.7%	96.3%	100.0%
		female	0	190	190
			0.0%	100.0%	100.0%
	Total		7	373	380
			1.8%	98.2%	100.0%

Table 4.29: Awareness of Other Applications

District			Using other apps										Total	
				T Wallet	Paytm	Both T Wallet and Paytm	MNREGS and Bhavan App	None	Paytm	RTC and IRCTC	RTC wallet app	T Wallet		T Wallet
Adilabad	Gender	male		8	9	13	1	111	1				5	148
				5.4%	6.1%	8.8%	0.7%	75.0%	0.7%				3.4%	100.0%
		female		6	5	0	0	132	1				4	148
				4.1%	3.4%	0.0%	0.0%	89.2%	0.7%				2.7%	100.0%
	Total			14	14	13	1	243	2				9	296
				4.7%	4.7%	4.4%	0.3%	82.1%	0.7%				3.0%	100.0%
Nalgonda	Gender	male	185							1	1	3		190
			97.4%							0.5%	0.5%	1.6%		100.0%
		female	190							0	0	0		190
			100.0 %							0.0%	0.0%	0.0%		100.0%
	Total		375							1	1	3		380
			98.7%							0.3%	0.3%	0.8%		100.0%

Wallet and Paytm, either individually or in combination, are the only applications the male and female respondents of Adilabad were aware of. In Nalgonda, the respondents almost drew a blank on the aspect being discussed.

Table 4.30: Distribution of HH by Gender

District	Male	Females	Total
Adilabad	148(50%)	148(50%)	296(100%)
Nalgonda	190(50%)	190(50%)	380(100%)
Total	338(50%)	338(50%)	676(100%)

Table 4.31: Number of Mobile with Individuals (ratio)

District	Male	Females	Total	Male: Female ratio of mobiles
Adilabad	220	210	430	1.04:1
Nalgonda	341	296	637	1.15:1
Total	561	506	1067	1.11:1

Table 4.32: Expenditure on Number of Mobiles

District	Number of Mobiles	Sum	N	Mean
Adilabad	One	94250	183	515
	Two	47000	92	511
	Three	11500	21	548
Nalgonda	One	92750	173	536
	Two	91750	157	584
	Three	31500	50	630
TOTAL	ONE	187000	356	525
	TWO	138750	249	557
	THREE	43000	71	606

4.8. Conclusion:

The above analysis shows that there is similarity on a number of levels and wide variation on other levels in the two districts. The overall analysis shows some interesting findings such as the ownership of mobile is irrespective of income, educational qualification, occupation and age. Although a good number of women own mobiles, there is a gap between ownership of mobile between both genders with more number of males owning mobiles than females. Consequently, the awareness of app information and usage amongst males is also more than females. In the case of the use of biometric, it is observed that both genders have accessed biometric services equally and its most popular usage is with respect to MGNREGS.

Few conclusions and recommendations drawn from the study are summarised in the next chapter.

Chapter - 5

CONCLUSIONS & RECOMMENDATIONS

5.1. Introduction:

As discussed in the previous chapter, Adilabad district had two villages - Mukhra and Khandaw - which were ranked as better performing and worst performing villages, respectively, as per the ranking order of Antyodaya. In Nalgonda district, there are Telakantigudem (best ranking) and Darveshpuram (worst ranking) villages. These villages are comparable between these two districts, based on three significant criteria including 1) Digital awareness and adoption level, 2) Mission Antyodaya ranking and 3) Availability of IT infrastructure and connectivity. These four villages are unequal to each other in terms of different geographical locations, particularly distance from town and social compositions of people which includes SHG members, social groups like SC/ST/OBC and proximity from institutions, particularly sources of finance like banks. Regarding geographical differences, Adilabad district is located far away from the State capital Hyderabad while Nalgonda district is located closer to Hyderabad city in which people have more exposure to different schemes and policies. The location of these villages is also varied. For instance, the location of Mukhra village is 30 kilometres away from the headquarters of the district while Khandaw is located about 50 to 60 kilometres away. The geographical difference between Darveshpuram and Telakantigudem villages is about 10 km each from district headquarters.

The analysis of usage of mobile phones shows that the more developed villages - Mukhra and Telakantigudem - have more smartphones. Yet, interestingly, respondents with no phones also emerge from the Mukhra villages. While 12.5 per cent of Mukhra village has no phone, Telakantigudem has 40.2% of respondents with no phone.

In terms of the number of phones in a single household, the backwards villages in Khandaw and Darveshpuram districts have more mobile phone users in a single household. The households in better villages of Mukhra and Telakantigudem owned one phone each.

The duration of mobile phone usage differs as respondents who were accessing mobile phone for up to an hour per day is higher in villages having a low Antyodaya score. It is submitted that mere ownership and duration of usage of mobile are not the criteria for development.

The purpose of mobile usage in all districts is predictably making calls followed by accessing YouTube and WhatsApp. The difference is reflected as educational websites were accessed in Khandwa and news and government schemes were accessed through mobile in Mukhra. It is evident that the interior villages of Adilabad district show more diversity in access to internet than the villages of Nalgonda. Irrespective of Antyodaya standings, villages are accessing YouTube. Conclusively, Facebook penetration in rural population is irrespective of the geographical distance from headquarters and Antyodaya ranking of the village.

In the case of online banking, around 32 per cent in Mukhra village were accessing the service to fulfil their necessities without visiting the departments concerned. Most people access online banking for paying their bills, making purchases, booking bus and train tickets and transferring money. Conclusively, online banking is accessed irrespective of the development of the district and its distance from headquarters.

This study proves beyond doubt that the MeeSeva service is known, popular and accessed in both districts. This is generally accessed for Aadhaar card, certificates and cash withdrawal. Nalgonda villages have a lesser disparity in MeeSeva access than Adilabad villages. Conclusively, awareness of government app and schemes and consequent usage increase when a district is located near the capital.

As against the popular stance that the rural population draws most entertainment from mobiles, a very interesting variation was found. Around 47% of the respondents in Mukhra village and 23.6% in Khandaw village watch entertainment programmes on their mobiles. In Adilabad, the respondents mostly listen to songs, browse movies and access news. In Nalgonda, as per responses received from Telakantigudem and Darveshpuram villages, 85.9% and 90.8%, respectively, do not access entertainment on mobile although they spend one to four hours on mobile.

The biometric services are being accessed in both districts for MGNREGA wages, PDS and pension. In the better villages of Adilabad, namely Mukhra village, a larger number of respondents (52 %) became aware of the service offered by government apps but the proportion of such respondents in Khandaw has only been restricted to 2.8%. A majority of those who are aware of the apps used apps related to agriculture followed by T Wallet and Paytm. In the case of Nalgonda, around 98% in both villages were unaware of government apps. Hence, government apps were found popular in the villages of Adilabad district. This shows that proximity to State capital did not enhance awareness and access to government apps.

The study shows that none of the respondents in both districts has adequate knowledge of the apps. A lot of coverage was generated in newspapers regarding Aarogyasri but there is a wide disconnect in passing the information to the intended user. Respondents have suggested for installation of voice-based information instead of text in the local language.

Regarding training, a large number of respondents - 77.1%) in Khandaw and 50.7% in Mukhra - desire to know the services offered by this app. Similarly, 58.2% in Telakantigudem and 62.2% in Darveshpuram wanted training on using the app. The most preferred ways of training are YouTube and group discussion. In Nalgonda villages, the preferred method is coaching or demonstration. It can be inferred that YouTube as a method of imparting training is gaining popularity and more online videos may be useful.

5.2. Conclusion:

Based on a pilot study done in Pochampalli village, Hyderabad, Telangana, a number of hypotheses were formulated. From the data collected, the following conclusions have been drawn:

- Profile: The study was carried out in 676 households - 296 households from Adilabad and 380 from Nalgonda - having one respondent each. Most of the respondents in the age group of 15-25 and 35-55 were found available to take the survey although the proportions of members in various age groups were not the same in the two districts. About three-fourth of them covered by this study were

married persons. Education levels in both districts show that almost 40% of the respondents are illiterate. Both districts showed that variation in the occupational pattern of the sample respondents with more farmers and labourers, respectively, in Adilabad and Nalgonda. Both districts had low incomes but expenditure levels in Nalgonda were higher. The family size of Adilabad was found to be higher than Nalgonda. Land ownership was high in Adilabad and 25% of the respondents from both districts owned livestock. But vehicle ownership pattern was high in favour of Nalgonda.

- Mobile usage: Adilabad showed more owners of mobile than Nalgonda. Yet, 70% of the mobiles owned were feature phones. More mobile phones per household were found in Nalgonda. Most people do not pay data bills and expenditure on mobile does not generally cross more than Rs 500. Using mostly for not more than an hour a day, the major use of mobile was limited to making calls. Interestingly, Adilabad was found to be more versatile in the usage of phone than Nalgonda. Online banking was used, mostly to pay bills. MeeSeva centre and its usage were popular in both districts from where bill payments and Aadhaar related works are carried out. With very limited knowledge of apps, the respondents in both districts showed that they were aware of it. T Wallet, Paytm and mKisan were the more popular apps used by them. The study reveals that the respondents in Adilabad were more aware of government apps than the Nalgonda sample. Yet, the usage was very limited. There is a conspicuous absence of any significant role of PRIs in facilitating digital knowledge transaction among the population. The biometric service was commonly used and extremely popular for MGNREGS works followed by PDS. The data reflects that Adilabad reports connectivity issues, yet the usage of mobile is more in Adilabad. So, it is inferred that private data providers are playing a significant role in providing the data in Adilabad. Using mobile for entertainment is more popular in Adilabad. A general interest in learning the apps and their usage and taking training through YouTube/ demonstration and training has been noticed.

5.3. Co-relating variables:

Co-relating variables revealed that the use of mobile and age are inversely related and in fact, younger people below 35 years tend to use mobile for online banking. The study reveals that educational levels do not impact mobile ownership. The ownership of mobile is gender-sensitive with more men owning mobiles in both districts. The field observations reveal that mobile ownership among women happens post marriage; hence, more women above 35 years were mobile owners whereas that is not the case with men. This bias in attitude tends to emanate from the belief of ownership of women as if they are left for freely using mobile they will misuse it. This was not part of the questionnaire but was reported after a platonic conversation. A large variation was found in income level and ownership of mobile in both districts. In Adilabad, income does not have any role to play in determining the usage of phone - an almost equal percentage of respondents from both lower and higher income groups have phones. In Nalgonda district, a larger percentage of respondents belonging to higher income groups use phone than others. However, income had no effect on the type of phone used in both districts. It is noticed that education affected the usage of Android phones. Older age groups possessed more feature phones in both districts. There was no significant relationship between the occupation and usage of phone. Men own mobile irrespective of education and age but ownership in the case of women depends on age as discussed above. However, there is differential data related to gender and educational qualification. In Adilabad, both illiterate and literate females possess mobiles; but in Nalgonda, the percentage of educated women owning mobile was higher.

5.4. Summary:

- ⇒ In a nutshell, it can be concluded that possession of mobile itself is not a mark of development. Ownership of a smartphone, which is superior to a simple feature phone, may be a precursor to accessing and utilising the internet platform for development.
- ⇒ Urbanisation or proximity to urban headquarters does not seem to impact more usage of mobile phone. Adilabad utilises mobile phone more than Nalgonda.

- ⇒ When income levels are compared between districts, it is found that Nalgonda has a mean higher income level than Adilabad. But the income level did not affect the ownership of the phone. It affected ownership in android phones.
- ⇒ Education did not have any impact on phone ownership in both districts. In both districts, persons with lower educational qualifications and illiterates were using feature phones than others. In other words, there is a negative relationship between education and the type of ownership of a phone. This statement is true in the case of both districts. Yet, the educated population uses the phone in a versatile way to access apps as compared to the illiterate. In the case of the use of biometric services, such distinction between the literates and the illiterates did not exist.
- ⇒ When ownership of mobile was checked across the gender, it was found that males outnumbered females in both districts irrespective of age, educational qualification and income. In Adilabad, both genders irrespective of educational qualification were mobile owners. In the case of Nalgonda, females with higher educational qualifications were possessing mobile phones. The married age group had more phone ownership. Hence, husbands, who are smartphone-friendly, played opinion leaders to introduce phones to wives.
- ⇒ Age played an important role as the younger population owned more Android phones and showed a higher length of usage as compared to older people.
- ⇒ The role of Panchayats to profess and popularise mobile usage was not found. In the case of Nalgonda, some CSR activity by Airtel about some apps was noted, which had generated some information in Nalgonda district.

5.5. Indicators from Conclusions from the study:

Certain indicators are conceived as a parameter to understand the relative development of a village in terms of access to technology which is among the prime factor considered for the overall development. These are as below:

- * Possession of mobile phone itself, particularly smartphone

- * A higher number of mobiles per household
- * Its usage in terms of hours of engagement, for entertainment in particular
- * Preference for usage besides calling
- * Access to online banking
- * Awareness of government apps- MeeSeva
- * Urge to upgrade/learn about app
- * Training through YouTube preferred to demo or coaching

5.6. Recommendations:

A study conducted by the Centre for Knowledge Societies commissioned by Nokia in 2007 had identified seven major service sectors, including transport, micro-commerce, finance and healthcare, governance, education and infotainment that could be radically transformed through mobile technologies. Some of the recommendations inferred as reference of literature review and outcome of the basic research are enlisted below:

- 1) Local and State governments need to integrate their telecom regulatory, tax and rural development policies, and do more to incentivise and support the roll-out of mobile services across the country;
- 2) The mobile industry needs to understand the social impact of mobile connectivity on rural communities and to make it as accessible as possible to them. This does not only mean lower prices and costs of ownership - to really make a contribution to development they will also need to localise the mobile experience with relevant applications and services. Many of these will be innovated at the grassroots level and it is important for the mobile industry to work at this level to deliver real improvements; and
- 3) Non-governmental organisations have an important role to play in working with the State agencies to define the needs of rural communities and to develop new ways

together to deliver a wide range of different social and welfare services. To do this, they also need to work much more closely with the mobile industry to understand and test the technological possibilities. (Michael Schwartz, Jan 2007).

As a fallout of the research, the following interventions may be suggested:

- ◆ To facilitate online learning, YouTube videos were found to be popular. The government may initiate Telugu-based videos linked to apps to popularise schemes.
- ◆ Education levels were not found to have a direct impact on phone usage; therefore, it is suggested that CSR along with NGOs like TITA may assist in popularising internet literacy. Installation of the kiosk is necessary for regular practice.
- ◆ A communication strategy and use of suitable communication tools, particularly online advertisements and voice-based SMS or calls, may be made an essential tool for generating awareness during the media campaigns organised by the government for its policies.
- ◆ To increase the number of smartphones and lower the number of feature phones in use- the government may help any start-up to launch a smartphone within Rs. 500 for increasing access.
- ◆ This phone may have a built-in facility of apps related to government schemes.
- ◆ A directory of apps and links is necessary to ease out information overload.

5.7. Role of NIRDPR:

As a part of the child-friendly Panchayat and provision of library in Panchayats, it is envisaged that mobile usage may be popularised through digital literacy and provision of a compendium of government websites and links related to every policy whether it is Central or customised as per State and Institutional information. The Institute may develop a platform with links to other relevant information related to schemes, eligibility of beneficiaries, etc. The Institute may seek linkages through CSR and NGOs for the upkeep and use of kiosks to access the internet. NIRDPR in collaboration with other government agencies (like IIT) may facilitate such literacy.

It is envisaged to initiate a discussion by forming a focus group composed of NGOs working for digital literacy, companies in mobile business, CSR who may fund project on mobile literacy campaigns, Ministry of Women and Child Welfare, and Ministry of Telecommunications and draw up an agenda to initiate mobile literacy in a project mode. The objective of such an initiative may be to utilise the digital platform for bringing together policy initiatives of the Central/State governments through an app with linkages to all relevant apps linked to different schemes. To begin this initiative, Telangana as a model State with TITA may be roped in.

A compendium of mobile phone numbers of different Sarpanches is already with the Centre for Panchayati Raj. Once the initiative above is worked out, the app may be rolled out to all these numbers. Videos relating to the use of internet may be made and popularised. Joint training with NGOs like Saathi for Sarpanches and PRIs may help in this regard. SIRDs and ETCs may be roped in to support the use and utility of the app.

Internet usage is mostly dependent on data provisioning, therefore as per progress under DISHA, the rollout of the app may be decided.

5.8. Limitation of the study and future directions for research:

This study is limited in scope due to time and money constraints, although it brings about a lot of insight into the newly formed Telangana State.

Future research may be directed to study how to encourage national and international governments, the mobile industry and NGOs to work together to support the development of these services by increasing access to, and use of, mobile communications in rural communities. The social impact of mobile phone on kinship could be an interesting area of research. Empirical research on the impact of mobile phones in developing countries is fragmented. There is limited research in India as well. Therefore, it is proposed to expand the research for a pan-India study. Mobiles can be linked to developing the digital capability for entrepreneurship. Mobile usage can be increased by employing it in education and making it a cost-effective and scalable way of improving education.

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National Institute of Rural Development and Panchayati Raj
Ministry of Rural Development, Government of India
Rajendranagar, Hyderabad - 500 030
Telangana, India