



ANALYSIS ON MOBILE SUBSCRIPTION IN PERAMBALUR DISTRICT

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Cite This Article: A. Dinesh Kumar, M. Vasuki & K. Nallu Samy, "Analysis on Mobile Subscription in Perambalur District", International Journal of Applied and Advanced Scientific Research, Page Number 71-84, Volume 1, Issue 1, 2016

Introduction:

There is much discussion in the academic world of communication as to what actually constitutes communication. Currently, many definition of communication are used in order to conceptualize the processes by which people navigate and assign meaning. Communication is also understood as the exchanging understanding. Additionally the bio-communication theory investigates communicative processes within and among nonhumans such as bacteria, animals, fungi and plants. We might say that communication consists of transmitting information from one person to another. In fact, many scholars of communication take this as a working definition, and use Harold Lass well's maxim, "who says what to whom in what channel with what effect", as a means of circumscribing the field of communication theory. Communication stands so deeply rooted in human behaviours and the structures of society that scholars have difficulty thinking of it while excluding social or behavioural events. Because communication theory remains a relatively young field of inquiry and integrates itself with other disciplines such as philosophy, psychology, and sociology, one probably cannot yet expect a consensus conceptualization of communication across disciplines.

Classification of Communication:

The communication can be classified as follows:

- ✓ Verbal of communication
- ✓ Elements of communication
- ✓ Forms of communication
- ✓ Methods of communication
- ✓ Process of communication
- ✓ Interpersonal of communication
- ✓ intrapersonal of communication
- ✓ levels of communication

The importance of the two- way nature of communication in which the success of the process depends heavily upon the sender receiving feedback. The sender requires assurance that his/her points are being received and understood. E.g., on a notice board, if a petition has been put up, the group organizing the petition need others to put their name on the petition to give feedback, and show that the message is being spread across. It is the use of a common system of symbols, signs and behaviour in exchange for information, ideas and emotions.

Types of Classification:

There are lots of different types of communication. Some of them combine with other methods as both types of communication can be used.

Formal: Communications which are routed through what have been known as official channels, for examples, a written memorandum from a managing director to his/her departmental heads to call a meeting.

Informal: Information is passed on by word of mouth among interested colleagues who have received it from various sources.

Diagonal: There is no obvious line of authority through which a middle manager may want a service or job to be done.

Vertical: The principal channel for routing directions, instructions and policies from top decision makers down through the organization to the people, who at various levels will implement them.

Verbal: Includes speaking to another person over the telephone, face to face etc, in discussion, debate, interview, presentation etc.

Non – Verbal: There is no spoken language e.g., eye contact, body language, sign language etc.

Visual: When information is displayed in various ways e.g. tables, advertisements etc.

Written: When the message being sent is displayed in writing, e.g. e –mail, letters, fax etc.

Internal and external are another two methods of communication. There are various methods of internal communication, which can be used in an organization. These include notices, bulletins, newsletters, fax, letters, telephone, memos, Communication by computers, face to face, reports, memorandum etc.

Mobile Subscription in Perambalur:

In this modern scientific world, man is gradually becoming machine. In order to communicate the message person to person he needs a mode of communication. In our modern world mobile phone can be used for most effective communication.

District Profile:

In the Government Order G.O (Ms) No. 683 Dated 19-11-2007 the Government have passed the following orders: Reorganized and bifurcated into Perambalur district with headquarters at Perambalur consisting of one revenue division of Perambalur and three Taluks of Perambalur, Kunnam and Veppanthattai. As per 2014 census, the density of population in the district is 322 per Sq. km. Perambalur district is centrally located in Tamil Nadu and is 267 km away in southern direction from Chennai. The district has an area of 3691 Sq.km.

Agriculture:

Sugarcane is grown as a major commercial crop. The public sector factory Perambalur Sugar Mills at Eraiyur is functioning in the district with a capacity of crushing 3000 tonnes per Day. Other one is Dhanalakshmi Srinivasan Sugar factory at Udumbiam is functioning in Perambalur district. The Pre- dominate soil in the district is red sanding with scattered packets of black soil. The soil in the district is best suited for raising dry crops. The district has a high means of temperature and low degree of humidity.

Transport and Communication:

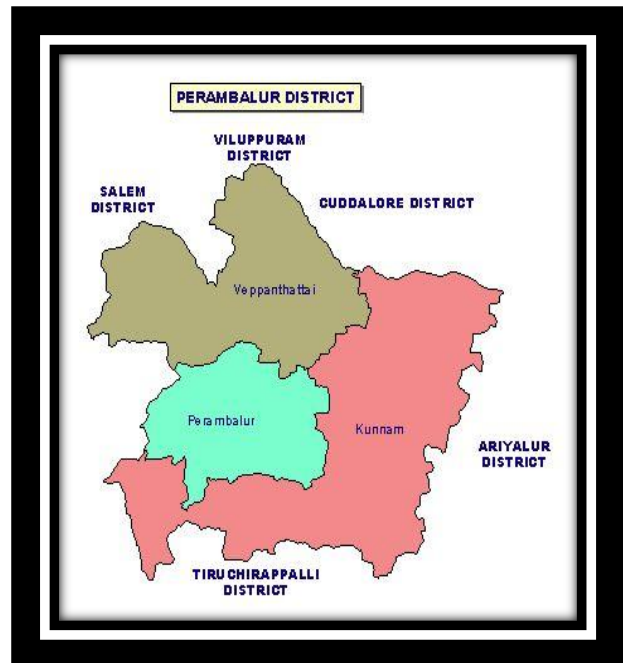
Ariyalur Railway station belongs to Southern Railway which connects Chennai, Madurai, Tuticorin and Thirunelveli. Perambalur is an important road junction on the Chennai – Dindugal National Highways. The district has well knit road system connecting various important centres in the region.

Speciality in Perambalur:

Dhanalakshmi Srinivasan Medical College, Dhanalakshmi Srinivasan 3 Star hotel holds one of the important in Perambalur district.

Objectives of the Study:

- ✓ To explore the evolution of mobile phone technology.
- ✓ To study the subscriber behaviour of mobile phone user.
- ✓ To study the average monthly income of consumer and their monthly expenditure towards mobile phone.
- ✓ To study the performance and satisfaction level of different brands of mobile phone.
- ✓ To study the performance and satisfaction level of different network connections.



History of Subscription:

Perambalur district has seven types of mobile subscription. They are

Aircel:

	
Founded	In 1999 Founded By Chinnakannan Sivasankaran
Headquarters	Chennai, Tamilnadu, India
Key people	Sandip Das, Director Kaizad Heerjee, COO Anup Vikal, CFO Jean Pascal, Head Operating Division
Products	Mobile telephony, Wireless broadband services
Parent	Maxis Communications (74%)

Aircel is an Indian mobile network operator headquartered in Chennai, which offers voice & data services ranging from post paid and prepaid plans, 2G and 3G services, Broadband Wireless Access (BWA), Long Term Evolution (LTE) to Value-Added-Services (VAS). In 2006, Aircel was acquired by Malaysia's biggest integrated communications service provider Maxis (Maxis Communication Berhad) and is a joint venture with Sindya Securities & Investments Pvt Ltd - Maxis holds 74% equity in the company. It is India's fifth largest GSM mobile service provider and seventh largest Mobile service provider (both GSM and CDMA) with a subscriber base of over 65.1 million. It has a market share of 7.33% among wireless operators (includes GSM, CDMA, and FWP operators) in the country. Aircel has also obtained permission from the Department of Telecommunications (DoT) to provide international long distance (ILD) and national long distance (NLD) telephony services. It also has the largest service in Tamil Nadu.

Timeline and Early History:

Aircel started as a regional player in Tamil Nadu in 1999.[8] Soon, it became the leading operator in Tamil Nadu. At one time, Aircel was the fastest growing operator in India. Because of this, it attracted foreign investments and Malaysian operator Maxis Communications bought a 74 percent stake in the company in 2005 from its Indian owner Chinnakannan Sivasankaran. In 2010, the company bought 3G and wireless broadband (BWA) spectrum in 13 and 8 circles respectively in the 2010 spectrum auction. It paid US\$1.44 billion (Rs. 79.1 billion) for the 3G spectrum and US\$0.76 billion (Rs. 49.76 billion) for BWA. Of this, the company raised \$0.88 billion (Rs. 48.3 billion) from Deutsche Bank, Standard Chartered Bank, HSBC and Barclays. It also took a \$0.44 billion (Rs. 24.2 billion) one-year bridge loan from HSBC, Punjab National Bank and Axis Bank. The company, as of November 2012, has around 1 million 3G customers. It is yet to launch its LTE network. Aircel expects to launch it in the first quarter of 2013.

3G: On 19 May 2010, the 3G spectrum auction in India ended. Aircel paid ₹ 65,000 million for spectrum in 13 circles – the least cost per circle compared to other operators. The circles it will provide 3G in are Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, Karnataka, Kolkata, Madhya Pradesh and Chhattisgarh, North East, Orissa, Punjab, Tamil Nadu, Uttar Pradesh (East) & Uttarakhand and West Bengal. Aircel has introduced new price plans for its consumers and are termed to be the cheapest in the country.

4G: On 11 June 2010, the broadband wireless access (BWA) spectrum auction in India ended. Aircel paid Rs. 34380 million for spectrum in eight circles, the second highest wins overall - after Mukesh Ambani led Reliance Infotel. The circles it has won spectrum are Andhra Pradesh, Assam, Bihar, Jammu & Kashmir, North East, Orissa, Tamil Nadu and West Bengal. It also has 3G spectrum in all these circles. Chinese equipment maker ZTE announced on 30 December 2013, that it had won a contract to deploy a 4G broadband network based on LTE technology for Aircel. The LTE network will be launched in Tamil Nadu, and expand to a few other business critical circles in the first stage.

Bharath Airtel:

	
Founded	7 July 1995
Founder(s)	Sunil Bharti Mittal
Headquarters	Bharti Crescent, 1, Nelson Mandela Road, New Delhi, India
Key people	Sunil Bharti Mittal (Chairman and MD)
Products	Fixed line and telephony, broadband and fixed-line internet services, digital television and IPTV

Bharti Airtel Limited, commonly known as Airtel, is an Indian multinational telecommunications Services Company headquartered in New Delhi, India. It operates in 20 countries across South Asia, Africa, and the Channel Islands. Airtel has a GSM network in all countries in which it operates, providing 2G, 3G and 4G services depending upon the country of operation. Airtel is the world's third largest mobile telecommunications company. It is the largest cellular service provider in India, with 192.22 million subscribers. Airtel is the largest provider of mobile telephony and second largest provider of fixed telephony in India, and is also a provider of broadband and subscription television services. It offers its telecom services under the "Airtel" brand, and is headed by Sunil Bharti Mittal. The company has a submarine cable landing station at Chennai, which connects the submarine cable connecting Chennai and Singapore.

History:

Sunil Bharti Mittal founded the Bharti Group. In 1983, Mittal was in an agreement with Germany's Siemens to manufacture push-button telephone models for the Indian market. In 1986, Mittal incorporated

Bharti Telecom Limited (BTL), and his company became the first in India to offer push-button telephones, establishing the basis of Bharti Enterprises. By the early 1990s, Sunil Mittal had also launched the country's first fax machines and its first cordless telephones. In 1992, Mittal won a bid to build a cellular phone network in Delhi. In 1995, Mittal incorporated the cellular operations as Bharti Tele-Ventures and launched service in Delhi. In 1996, cellular service was extended to Himachal Pradesh. In 1999, Bharti Enterprises acquired control of JT Holdings, and extended cellular operations to Karnataka and Andhra Pradesh. In 2000, Bharti acquired control of Sky cell Communications, in Chennai. In 2001, the company acquired control of Spice Cell in Calcutta. Bharti Enterprises went public in 2002, and the company was listed on Bombay Stock Exchange and National Stock Exchange of India. In 2003, the cellular phone operations were rebranded under the single Airtel brand. In 2004, Bharti acquired control of Hexacom and entered Rajasthan. In 2005, Bharti extended its network to Andaman and Nicobar. This expansion allowed it to offer voice services all across India. In 2009, Airtel launched its first international mobile network in Sri Lanka. In 2010, Airtel acquired the African operations of the Kuwait based Zain Telecom. In March 2012, Airtel launched a mobile operation in Rwanda.

Worldwide Presences:

Coverage map of Bharti Airtel across 20 countries, Airtel is the one of the largest mobile operator in the world in terms of subscriber base and has a commercial presence in 20 countries and the Channel Islands.

Mobile Services:

Airtel operates in all telecom circles of India. Its network is present in 5,121 census towns and 457,053 non-census towns and villages, covering approximately 86.6% of the country's population as of September 2012. Airtel is the largest operator in rural India with 83.82 million subscribers as of April 2013. Airtel is the 6th most valued brand according to an annual survey conducted by Brand Finance and The Economic Times in 2010.

3G: On 18 May 2010, the 3G spectrum auction was completed and Airtel paid the Indian government Rs. 122.95 billion (US\$2.0 billion) for spectrum in 13 circles, the most amount spent by an operator in that auction. Airtel won 3G licences in 13 telecom circles of India Airtel 3G services are available in 200 cities through its network and in 500 cities through intra-circle roaming arrangements with other operators. Airtel had about 5.4 million 3G customers of which 4 million are 3G data customers as of September 2012.

4G: On 19 May 2010, the broadband wireless access (BWA) or 4G spectrum auction in India ended. Airtel paid Rs. 33.1436 billion (US\$530 million) for spectrum in 4G. Airtel launched 4G services using TD-LTE technology in Kolkata, becoming the first company in India to offer 4G services. The Kolkata launch was followed by launches in Bangalore (7th May, 2012), Pune (18th October, 2012), and Chandigarh, Mohali and Panchkula (25 March 2013). In December 2013 Bharti Airtel announced that it is ready to introduce much-awaited voice calling facility on its existing 4G LTE network in Bangalore. Airtel had 20,000 4G subscribers as of March 2013.

WiFi: Airtel has plans to launch WiFi services in India. It intends to start offering WiFi services in Delhi NCR, Mumbai and Bangalore in initial phase. All plans will be on secure wireless broadband internet with unlimited usage and will be session or time based. Users can use the service by finding a hotspot, selecting 'Airtel WiFi Zone', activating the voucher and then login to start browsing.

Smart Drive: According to Airtel, Smart Drive calculates the traffic on the basis of the number of GPS devices used on a particular road, their average speed, as well as historical trends of traffic on that route. Smart Drive also allows users to search for points of interest like restaurants, theatres and shopping malls.

Network Experience Centre: Airtel has a Network Experience Centre (NEC) which observes end to end customer experience, in near real time, along with the standard network elements on Airtel's operations. The NEC is located in Manesar, Haryana and went live on 31 October 2012.

BSNL: Bharat Sanchar Nigam Limited



Founded	incorporated 15 September 2000 with effect from 1 October' 2000
Headquarters	New Delhi, India
Key people	R.K. Upadhyay (Chairman & MD)
Products	Fixed line and telephony, Internet services, digital television, IPTV

Bharat sanchar nigam limited (abbreviated BSNL) is an Indian state-owned telecommunications company headquartered in New Delhi, India. It was incorporated on 15 September 2000. It is the largest provider of fixed telephony and fourth largest mobile telephony provider in India, and is also a provider of broadband services. However, in recent years the company's revenue and market share plunged into heavy

losses due to intense competition in the Indian telecommunications sector. BSNL is India's oldest and largest communication service provider (CSP). It had a customer base of 95 million as of June 2011. It has footprints throughout India except for the metropolitan cities of Mumbai and New Delhi, which are managed by Mahanagar Telephone Nigam (MTNL). 2007 was declared as "Year of Broadband" in India and BSNL announced plans for providing 5 million broadband connectivity by the end of 2007. BSNL is a pioneer of rural telephony in India. BSNL has recently bagged 80% of US\$ 580 m (INR 25 billion) Rural Telephony project of Government of India. On 20 March 2009 BSNL advertised the launch of BlackBerry services across its Telecom circles in India. As of December 2011, many other private operators have started rolling out their 3rd Generation (aka 3G) services alongside and are enjoying some success in their campaigns to get market share. While BSNL still maintains its connectivity standard and expands to many more areas including rural areas with their 3G services. Also the network infrastructure has been upgraded from to provide 3.6 Mbit/s to 7.2 Mbit/sec. It is enjoying a slow but somewhat steady success in gaining market share in this regard. The introduction of MNP (Mobile Number Portability) which is a service that lets the consumer change wireless service providers while retaining their actual mobile number, BSNL has seen many customers opting for this service to move away from the services to other operators. BSNL announced the discontinuation of its telegram services from 15 July 2013, after 160 years in service. It was opened to the public in February 1855; in 2010 it was upgraded to a web-based messaging system in 2010, through 182 telegraph offices across India.

3G: While it did not participate in the 3G auction, BSNL paid the Indian government Rs. 101.87 billion for 3G spectrum in all 20 circles it operates in. State-owned MTNL provides 3G services in the other 2 circles - Delhi and Mumbai. BSNL recently launched a 3G wireless pocket router named Winknet Mf50 for 5800/- Indian rupees. Winknet Mf50 enables you to connect multiple devices to the internet using a single sim card.

3G Coverage: BSNL has the largest 3G network in India. Additionally, BSNL 3G services usually cover not only the main town/city but also the adjoining suburbs and rural areas as well. As of now BSNL has 3G services in 826 cities across India. The following is a list of BSNL 3G enabled towns/cities. This list covers only BSNL 3G services provided through HSDPA /HSUPA and HSPA+ for GSM subscribers and not EVDO for CDMA subscribers

Idea:

	
Founded	1995
Headquarters	Santacruz East, Mumbai, India
Key people	Kumar Mangalam Birla (Chairman)
Products	Mobile telephony, Wireless broadband
Parent	Aditya Birla Group (49.05%) Axiata Group Berhad (19.96%) Providence Equity (10.6%)

Inception and Growth:

In 2000, Tata cellular was a company providing mobile services in Andhra Pradesh. When Birla-AT&T brought Maharashtra and Gujarat to the table, the merger of these two entities was a reality. Thus Birla-Tata-AT&T, popularly known as Batata, was born and was later rebranded as IDEA. Then Idea set sights on RPG's operations in Madhya Pradesh which was successfully acquired, helping Batata have a million subscribers, and the licence to be the fourth operator in Delhi was clinched. In 2004, Idea (the company had by then been rechristened) bought over the Escorts group's Escotel gaining Haryana, Uttar Pradesh (West) and Kerala — and licences for three more — UP (East), Rajasthan and Himachal Pradesh. By the end of that year, four million Indians were on the company's network. In 2005, AT&T sold its investment in Idea, and the year after Tatas also bid good bye to pursue an independent telecom business. And Idea was left only with one promoter, the AV Birla group. Rs 2,700 crore adding Punjab and Karnataka circles. Modi's joint venture partner, Telekom Malaysia, invested Rs 7,000 crore for a 14.99% stake in Idea. Just around then, Idea's subsidiary, Aditya Birla Telecom sold a 20% stake to US-based Providence Equity Partners for over Rs 20,000 crore.

3G: On 19 May 2010, the 3G spectrum auction in India ended. Idea paid Rs 5768.59 crores for spectrum in 11 circles. The circles it will provide 3G in are Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra & Goa, Punjab, Uttar Pradesh (East) and Uttar Pradesh (West). On 28 March 2011, Idea launched 3G services in Gujarat, Himachal Pradesh and Madhya Pradesh. The launch

cities were Ahmadabad, Shimla and Indore. This makes Idea the sixth private operator (eighth overall) to launch its 3G services in the country following Tata Docomo, Reliance Communications, Airtel, Aircel and Vodafone. Idea currently supports up to 21.1 Mbit/s over 2G speeds of 256 Kbit/s. However, different handsets support different speeds, from 384 Kbit/s, 3.6 Mbit/s, 7.2 Mbit/s or 21.1 Mbit/s. Speeds also depend on the 3G plan/recharge that users opt for. The operator announced that IDEA 3G services will be available in 200 towns of 11 3G circles by mid-April 2011, progressively growing at the rate of ten towns per day to cover 750 towns by mid-2011 and 4000 towns by the end of 2012. Idea cellular has announced a cut of 70% in the tariff of its 3G services. On 23 November 2011 Idea Cellular launched two affordable 3G handsets in India: Idea 3G Smartphone Blades priced at Rs 7,992 and Idea 3G Smartphone priced at Rs 5,850. Both handsets are based on Android 2.2 Froyo. Idea has also launched a Dual-SIM Android smart phone in India on June 15, 2012 named as Idea ID-918 at a price point of Rs.5,994 (\$108 approx.) It features Android v2.3 OS, 3.2-inch capacitive touch screen, 3G, Wi-Fi and 3.2 MP rear facing camera. On 5 March 2013 Idea launched another 3G smart phone called Idea Zeal 3G which is a Dual SIM phone with 3 Megapixel camera.

Reliance:

	
Industry	Telecommunications
Founded	2004
Founder(s)	Anil Ambani
Headquarters	Mumbai, India
Key people	Anil Ambani (President) Vinod Sawhny (CEO)
Parent	Reliance Group

Reliance Communications Ltd. (commonly called RCOM) is an Indian Internet access (commonly called "broadband") and telecommunications company headquartered in Navy, India. RCOM is India's second largest telecom operator, only after Bharti Airtel. It is the 15th largest mobile phone operator with over 150 million subscribers. Established in 2004, it is a subsidiary of the Reliance Group. The company has five segments: Wireless segment includes wireless operations of the company; broadband segment includes Internet access operations of the company; Global segment include national long distance and international long distance operations of the company and the wholesale operations of its subsidiaries; Investment segment includes investment activities of the Group companies, and Other segment consists of the customer care activities and direct-to-home (DTH) activities.

Back Ground:

Ranks among the top 5 telecommunications companies in the world by number of customers in a single country. Reliance Communications corporate clientele includes 2,100 Indian and multinational corporations, and over 800 global, regional and domestic carriers. The company established a pan-India, integrated (wireless and wire line), convergent (voice, data and video) digital network that is capable of supporting services spanning the entire communications value chain, covering over 24,000 towns and 600,000 villages. Reliance Communications owns and operates the IP-enabled connectivity infrastructure, comprising over 190,000 kilometres of fibre optic cable systems in India, USA, Europe, Middle East and the Asia Pacific region.

Major Subsidiaries:

Reliance Telecommunication Limited: Subsidiary Reliance Telecommunication Limited (RTL) operates Gujarat, Madhya Pradesh, West Bengal, Himachal Pradesh, Odessa, Bihar, Assam, and the north east of India. It first offered GSM services in January 2009.

Reliance Tech Services: Reliance Tech Services is the IT services wing of Reliance Anil Dhirubhai Ambani group. It provides IT consultancy, business process outsourcing and software development for Reliance Communications and other ADA group companies.

Reliance Internet Data Centre: RIDC provides Internet data centre (IDC) services located in Mumbai, Bangalore, Hyderabad and Chennai. Spread across 650,000 sq ft (60,000 m²) of hosting space, it offers IT infrastructure management services to large, medium and small enterprises. It is one of the leading data-centre service providers in India and provides services like colocation, managed server hosting, virtual private server and data security.

Offices: Reliance Communications Limited has its offices in Ahmadabad, Bangalore, Chandigarh, Chennai, Hyderabad, Jaipur, Kochi, Kolkata, Lucknow, Patna and Pune.

Mobile: On 19 May 2010, the 3G spectrum auction in India ended. Reliance Communications paid ₹ 58642.9 million for spectrum in 13 circles. The circles it will provide 3G in are Delhi, Mumbai, Kolkata, Punjab, Rajasthan, Madhya Pradesh, West Bengal, Himachal Pradesh, Bihar, Odessa, Assam, North East, Jammu & Kashmir. On 11 June 2010, the broadband wireless access (BWA) or 4G spectrum auction in India ended. Infotel Broadband, a subsidiary of Reliance Industries, won pan-India licence in the auction across 22 circles, the only telecom operator other than state-owned BSNL/MTNL to do so. Infotel paid the government ₹ 128477.7 million for the licence. According to Cellular Operators Association of India (COAI) director-general Rajan S. Mathews, Reliance Industries was expected to launch 4G services in December 2011. On 31 January 2013, Reliance announced its partnership with Lenovo to market co-branded smart phones in India. The smart phones were said to use the Android operating system and have dual-core processors.

Tata Docomo:

	
Founded	November 2008
Headquarters	New Delhi, NCT, India
Services	Mobile network, Fixed Wireless Telephone, USB Internet Dongle
Parent	Tata Teleservices (74%) NTT DoCoMo (26%) (joint venture)

Tata Docomo is an Indian cellular service provider on the GSM, CDMA and platform-arising out of the strategic joint venture between Tata Teleservices and NTT Docomo in November 2008. It is the country's sixth largest operator in terms of subscribers (including both GSM and CDMA).

History:

Tata Docomo is part of the Indian conglomerate Tata Group. The company received the license to operate GSM services in nineteen telecom circles and was allotted spectrum in eighteen of these circles and launched GSM services on 24 June 2009. It began operations first in South India and currently operates GSM services in eighteen of twenty two telecom circles. It has licences to operate in Delhi but has not been allocated spectrum from the Government. Docomo provides services throughout India. Tata Docomo offers both prepaid and post paid cellular phone services. It has become very popular with its one second pulse especially in semi-urban and rural areas. On 5 November 2010, Tata Docomo became the first private sector telecom company to launch 3G services in India. Tata Docomo had about 42.34 million users at the end of December 2010.

Rebranding:

On 20 October 2011, Tata Docomo brought its brands - CDMA, GSM, Walky (Fixed Wireless Phone), Photon, INTERNET - under the Tata Docomo name. All subscribers to these services were migrated to the Docomo brand on 20 October 2011. The company's other brands - Virgin Mobile and T24 - are not part of the rebranding and will retain their names.

3G: On 19 May 2010, the 3G spectrum auction in India ended. Tata Docomo paid Rs. 6964.29 crores for spectrum in 22 circles. These circles obtained 3G licences and they are Madhya Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra & Goa, Punjab, Rajasthan, and Uttar Pradesh (West). On 5 November 2010, Tata DOCOMO became the first private sector telecom company (third overall) to launch 3G services in India, with a 20 city launch. Tata Docomo's HSPA+ 3G networks, set up with the assistance of NTT Docomo, supports high-speed internet access with speeds of up to 21.1 Mbit/s. The network also supports high definition voice for superior quality voice calls. On July 19, 2011, Docomo and Aircel entered into a roaming agreement for 3G services to jointly roll out 3G networks in the circles where they both have spectrum. In the spectrum auction held last year, Aircel won 3G spectrum in 13 of India's 22 circles (service areas), while TATA DOCOMO was awarded 3G licenses in nine circles. On December 14, 2011, Docomo ended its agreement with Aircel. Tata Docomo and Aircel currently have bilateral roaming agreements to allow their subscribers to seamlessly use 3G on roaming. Docomo had about 1.5 million 3G subscribers as of May 2011.

Airport – Wifi:

On 21 May 2013, Docomo announced that it had entered into an exclusive partnership with GMR Airports to offer WiFi services at Terminal 3 of the Indira Gandhi International Airport in Delhi and the Rajiv Gandhi International Airport in Hyderabad. Docomo offers WiFi services across the entire airport, including private airline lounges. Passengers can access free WiFi for 45 minutes, after which the passenger can continue to avail WiFi services by paying for it online.

Vodafone:

	
Predecessor(s)	Racal Telecom (1983 to 1991)
Founded	1991 - Berkshire, United
Headquarters	London, United Kingdom (Head office) Newbury, Berkshire, United Kingdom (Registered office)
Key people	Gerard Kleisterlee (Chairman) Vittorio Colao (CEO)
Products	Fixed line and mobile telephony, Internet services, digital

Vodafone India limited, formerly Vodafone Essar Limited, is the second largest mobile network operator in India after Airtel by subscriber base. It is based in Mumbai, Maharashtra. It has approximately 147.48 million customers as of December 2012. In July 2011, Vodafone Group agreed terms for the buy-out of its partner Essar from its Indian mobile phone business. The UK firm paid \$5.46 billion to its Indian counterpart to take Essar out of its 33% stake in the Indian subsidiary. It will leave Vodafone owning 74% of the Indian business, while the other 26% will be owned by Indian investors, in compliance with Indian law. On 11 February 2007, Vodafone agreed to acquire the controlling interest of 67% held by Li Ka Shing Holdings in Hutch-Essar for US\$11.1 billion, pipping Reliance Communications, Hinduja Group, and Essar Group, which is the owner of the remaining 33%. The whole company was valued at USD 18.8 billion. The transaction closed on 8 May 2007. It offers both prepaid and post paid GSM cellular phone coverage throughout India with good presence in the metros. Vodafone India provides 2.75G services based on 900 MHz and 1800 MHz digital GSM technology. Vodafone India launched 3G services in the country in the January–March quarter of 2011 and plans to spend up to \$500 million within two years on its 3G networks.

3G: On 19 May 2010, the 3G spectrum auction in India ended. Vodafone paid Rs. 11617.86 million (the second highest amount in the auctions) for spectrum in 9 circles. The circles it will provide 3G in are Delhi, Gujarat, Haryana, Kolkata, Maharashtra & Goa, Mumbai, Tamil Nadu, Uttar Pradesh (East) and West Bengal. On 16 March 2011, Vodafone launched 3G services in Uttar Pradesh (East) in the city of Lucknow. Vodafone had already launched limited 3G services in Chennai and Delhi earlier, but the Uttar Pradesh (East) launch counts as its first fully commercial launch. This makes Vodafone the fifth private operator (seventh overall) to launch its 3G services in the country following Tata Docomo, Reliance Communications, Airtel and Aircel. On 23 June 2011 Vodafone launched 3G service in Kerala by joining with Idea in an Intra Circle Roaming agreement. Initially Vodafone 3G services will be available in the following cities in Kerala – Ernakulum, Aluva, Calicut, Koyilandy, Alappuzha, Cherthala, Malappuram and Manjeri. On 28 June 2012, Vodafone launched a new international roaming package under which the users shall have not to pay multiple rentals in the countries they are visiting. Vodafone Group plc is a British multinational telecommunications company headquartered in London and with its registered office in Newbury, Berkshire. It is the world's third-largest mobile telecommunications company measured by both subscribers and 2013 revenues (in each case behind China Mobile), and had 453 million subscribers as of June 2013. Vodafone owns and operates networks in 21 countries and has partner networks in over 40 additional countries. Vodafone has a primary listing on the London Stock Exchange and is a constituent of the FTSE 100 Index.

Name:

The name Vodafone comes from voice data phone, chosen by the company to "reflect the provision of voice and data services over mobile phones".

History:

The evolution of 'Vodafone' brand started in 1982 with the establishment of 'Racal Strategic Radio Ltd' subsidiary of Racal Electronics plc – UK's largest maker of military radio technology. By initiative of Jan Steinbeck Racal Strategic Radio Ltd formed a joint venture with Millicom called 'Racal Vodafone', which would later evolve into the present day Vodafone.

Design and Methodology:

Methodology:

The validity of any research depends upon the reliability of the data. The data for this study were collected with help of primary and secondary data. The primary data were obtained from mobile phone users directly with the help of a well structured questionnaire was used to collect information from the responds and a survey technique was employed for collecting the data. Hence the researcher has maintained a good report with all the respondents in the study area.

Sampling Procedure:

A finite subject of the population selected from it with the objective of investigating its properties is called a sample and the number of units in the sample is known as the sample size. Sampling is simply the process of learning about the population on the basis of a sample drawn from it.

Methods of Sampling:

There are two methods of sampling. There are (i) Random sampling (ii) Non- Random sampling

Diagram:

A diagram is a visual form for presentation of statistical data. Diagram refers to the various types of devices such as bars, circles, maps, pictorials, cartograms, etc. These devices can take many attractive forms. An ordinary man can understand pictures and diagrams more easily than the figures, the use of diagrams becoming more and more popular in the present time.

Types of Diagram:

There are various diagrammatic devices by which statistical data can be presented. We shall discuss a few of them which are mostly used.

The following are the common types of diagram

- ✓ One Dimensional Diagram (line, bar & pie)
- ✓ Two Dimensional Diagram (rectangle, square, circle, etc)
- ✓ Three Dimensional Diagram (cube, spear, cylinder, etc)
- ✓ Pictogram
- ✓ Cartogram

One Dimensional Diagram:

In one dimensional diagram, the length of the lines or bars is consider and the width of the bars is not taken into consideration. The term bar means the thick wide line. The following are main types

Sub- Divided Bar Diagram:

The bar is sub-divided into various parts in proportion to the values given in the data and may be drawn an absolute figures or percentages. Each component occupies a part of the bar proportional to its share in the total to distinguish different components from one another, different colours or shades.

Multiple Bar Diagram:

Multiple bars are useful for direct comparison between two values. The bars are drawn side by side. In order to distinguish the bars different colours, shades etc., may be used and a key index to this effects be given to understand the different bars.

Pie Diagram:

The pie diagram ranks high in understanding. Just as we divide bar or a rectangle to show its components, a circle can also be divided into sectors. As there are 360 degrees at the centre, proportionate sections are cut taking the whole data equal to 360 degrees.

Chi – Square Test (χ^2) :

H_0 : The attributes may be independent under the null hypothesis; we frame the test statistics which is the chi-square test of goodness of fit. Karl Pearson has defined the chi- square test statistic as

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2(r-1)(c-1) \text{ d.f}$$

Here, O_{ij} - is the observed frequency of the i^{th} row in the j^{th} column, E_{ij} - is the excepted frequency corresponding to O_{ij} .

$$E_{ij} = \frac{R_i \times C_j}{N}$$

R_i – Indicates i^{th} row sum, C_j – Indicates j^{th} column sum, N – is the total frequency.

It is noted that the total observed frequency and total excepted frequency must be equally,

$$\sum_i \sum_j O_{ij} = \sum_i \sum_j E_{ij}$$

After estimating the value of chi – square, we compare it with the corresponding theoretical χ^2 value which is taken from χ^2 table corresponding to the relevant degree of freedom and level of significance.

Analysis:

Sub Divided Bar Diagram:

Table 1: Causes of Satisfaction

Satisfaction /Mobile subscription	Free SMS	Best network coverage	Internet	Good customer care support	Good tariff plan	Easy to recharge	Add on card facility	Total
Aircel	60	30	20	10	10	20	10	160
Airtel	20	30	30	10	10	10	20	130
BSNL	10	30	10	10	0	10	0	70
Idea	20	10	10	0	0	10	0	50
Reliance	20	20	0	0	0	10	0	50
Tata Docomo	10	0	0	30	20	0	0	60
Vodafone	20	40	0	30	0	0	40	130
Total	160	160	70	90	40	60	70	650

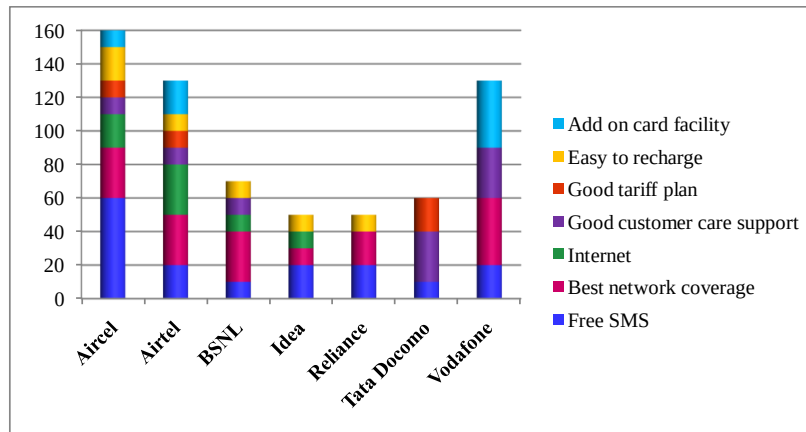


Figure 1: Causes of Satisfaction

Table 2: Causes of Un Satisfaction

Un satisfaction / Mobile subscription	Bad tariff plan	No proper coverage	Charges for SMS	Difficult to recharge	Bad customer care support	Total
Aircel	0	20	0	40	0	60
Airtel	0	20	0	0	0	20
BSNL	10	0	20	0	0	30
Idea	10	10	10	0	0	30
Reliance	10	50	30	0	10	100
Tata Docomo	10	40	30	10	10	100
Vodafone	0	0	10	0	0	10
Total	40	140	100	50	20	350

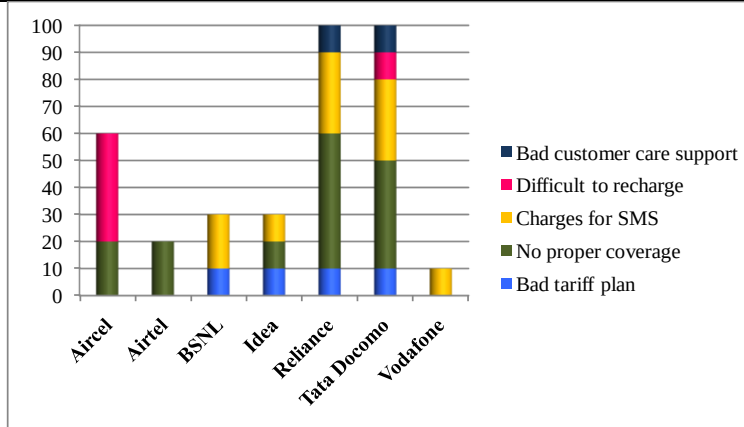


Figure 2: Table 2: Causes of Un Satisfaction

Table 3: Causes of Recommendation

Recommendation /Mobile subscription	Free SMS	Best network coverage	Internet	Good customer care support	Good tariff plan	Easy to recharge	Add on card facility	Total
Aircel	40	40	10	40	20	10	30	190
Airtel	20	60	50	20	10	10	10	180
BSNL	10	80	60	10	0	10	10	180
Idea	0	20	0	10	0	0	0	30
Reliance	10	40	0	0	0	0	0	50
Tata Docomo	10	20	10	10	0	10	10	70
Vodafone	10	170	20	30	20	10	40	300
Total	100	430	150	120	50	50	100	1000

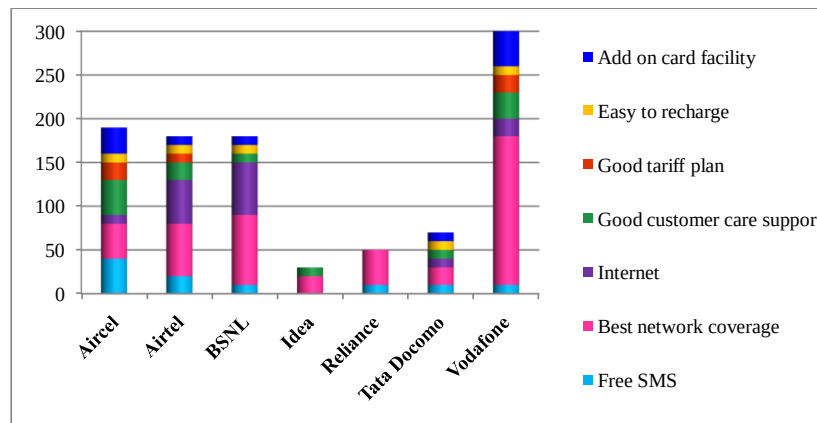


Figure 3: Causes of Recommendation

From the figure - 1, depicts that the causes of satisfaction according to the subscription Aircel, Airtel, BSNL, Idea, Reliance, Tata Docomo, Vodafone. In the causes of satisfaction, Aircel leads than any other mobile subscription in Perambalur district. From the figure - 2, Depicts that the causes of un satisfaction according to the subscription Aircel, Airtel, BSNL, Idea, Reliance, Tata Docomo, Vodafone. In the causes of un satisfaction, Reliance and Tata Docomo lead than any other mobile subscription in Perambalur district. From the figure - 3, depicts that the causes of recommendation according to the subscription Aircel, Airtel, BSNL, Idea, Reliance, Tata Docomo, Vodafone. In the causes of recommendation, Vodafone leads than any other mobile subscription in Perambalur district.

Multiple Bar Diagram:

Table 4: Satisfaction & Un Satisfaction For Mobile Subscription In Perambalur

Mobile subscription / Opinion	Aircel	Airtel	BSNL	Idea	Reliance	Tata Docomo	Vodafone	Total
Satisfaction	160	130	70	50	50	60	130	650
Un Satisfaction	60	20	30	30	100	100	10	350
Total	220	150	100	80	150	160	140	1000

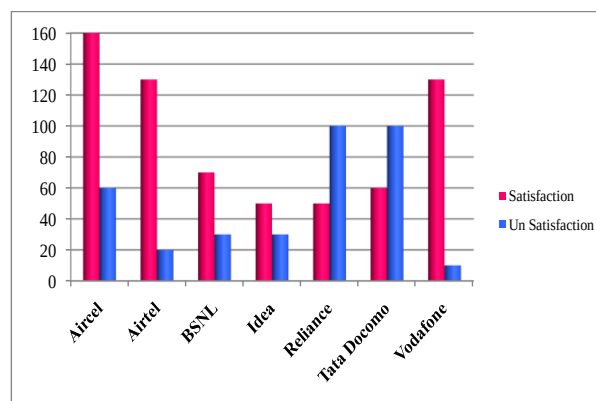


Figure 4: Satisfaction & Un Satisfaction For Mobile Subscription In Perambalur

From the multiple bar diagram (figure - 4) depicts that the satisfaction and un satisfaction according to the subscription Aircel, Airtel, BSNL, Idea, Reliance, Tata Docomo, Vodafone. Number of maximum satisfied person to use Aircel subscription next one is Airtel and Vodafone subscriptions. Number of minimum satisfied person to use Idea and Reliance subscriptions in Perambalur district. Number of maximum unsatisfied person to use Reliance subscription and Tata Docomo subscription respectively. Number of minimum unsatisfied person to use Vodafone subscription in Perambalur district.

Pie Diagram:

Table 5: Best Mobile Network Subscription in Perambalur District

Mobile	Aircel	Airtel	BSNL	Idea	Reliance	Tata Docomo	Vodafone
No of person used	200	190	70	50	100	100	290

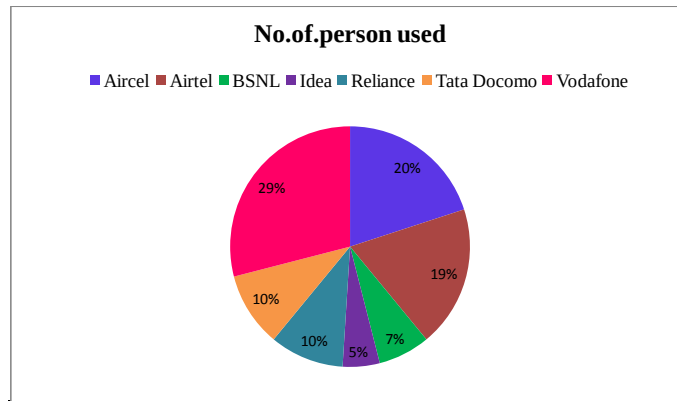


Figure 5: Best Mobile Network Subscription in Perambalur District

From the above pie diagram, we conclude that Vodafone is more convenient mobile subscription for Perambalur people as compared to others.

Chi – Square Test:

Table 6: Age Vs Sex

The observed data shown in the following tables;

Sex / Age	Below 20	20-30	30-50	Above 50	Total
Male	110	410	110	50	680
Female	30	190	90	10	320
Total	140	600	200	60	1000

H_0 : Sex and Age may be independent, $\chi_0^2 = 29.2366$ (calculated value), $\chi_{(2-1) \times (4-1)}^2 = 7.815$ (chi-square tabulated value), $\chi_0^2 > \chi_e^2$, So we reject the null hypothesis

Therefore we conclude that there is no association between Sex and Age.

Table 7: Recharge Amount Vs Salary

The observed data shown in the following table;

Recharge amount / Salary	Below Rs. 250	Rs. 250-Rs. 500	Rs. 500-Rs. 1000	Above Rs. 1000	Total
Below Rs. 5000	160	100	30	10	300
Rs.5000-Rs. 8000	200	140	20	40	400
Rs. 8000 –Rs 12000	70	40	60	30	200
Above Rs. 12000	30	20	40	10	100
Total	460	300	150	90	1000

H_0 : Recharge amount and Salary may be independent, $\chi_0^2 = 152.7616$ (calculated value), $\chi_{(4-1) \times (4-1)}^2 = 16.919$ (chi-square tabulated value), $\chi_0^2 > \chi_e^2$, so we reject the null hypothesis.

Therefore we conclude that there is no association between Recharge and Salary.

Table 8: Mobile Subscription Vs Mode of Payment

The observed data shown in the following table;

Subscription / Mode of payment	Air cel	Airt el	BS NL	Idea	Relia nce	Tata Docomo	Voda fone	Total
Prepaid	180	160	60	40	80	80	280	880
Post paid	20	30	10	10	20	20	10	120
Total	200	190	70	50	100	100	290	1000

H_0 : Mobile subscription and Mode of payment may be independent, $\chi_0^2 = 38.9228$ (calculated value), $\chi_e^2 (2-1) \times (7-1) = 12.592$ (chi- square tabulated value), $\chi_0^2 > \chi_e^2$, So we reject the null hypothesis.

Therefore we conclude that there is no association between Mobile Subscription Mobile and Mode of payment.

Table 9: Recharge Amount Vs Occupation Status

The observed data shown in the following table;

Recharge amt / Occupation	Below Rs. 250	Rs.250-Rs.500	Rs.500-Rs.1000	Above Rs.1000	Total
Student	110	20	20	0	150
Former	70	120	30	10	230
Govt employee	70	30	80	20	200
Pvt employee	60	40	10	10	120
Professional	120	70	10	50	250
Others	30	20	0	0	50
Total	460	300	150	90	1000

H_0 : Recharge amount and Occupation status may be independent, $\chi_0^2 = 286.3751$ (calculated value), $\chi_e^2 (6-1) \times (4-1) = 24.996$ (chi- square tabulated value), $\chi_0^2 > \chi_e^2$, So we reject the null hypothesis.

Therefore we conclude that there is no association between Recharge amount and Occupation status.

Table 10: Salary Vs Mobile Network

The observed data shown in the following table;

Salary/ Mobile Network	Below Rs. 5000	Rs. 5000- Rs.8000	Rs.8000 – Rs.12000	Above Rs. 12000	Total
Aircel	100	50	30	20	200
Airtel	30	90	50	20	190
BSNL	10	40	10	10	70
Idea	10	20	10	10	50
Reliance	50	20	10	10	100
Tata Docomo	40	30	20	10	100
Vodafone	170	60	40	20	290
Total	410	310	180	100	1000

H_0 : Salary and Mobile network may be independent, $\chi_0^2 = 148.9987$ (calculated value), $\chi_e^2 (7-1) \times (4-1) = 28.869$ (chi- square tabulated value), $\chi_0^2 > \chi_e^2$, So we reject the null hypothesis.

Therefore we conclude that there is no association between Salary and Mobile network.

Conclusion:

In this Hi – tech world, mobile phone is used for effective communication. Without mobile, there is no mobility in life. The current work was carried out in the analysis of mobile subscription in Perambalur district. Moreover, this study was assessed by using questioner with 13 attributes. In the first chapter, it contains definition of communication, classification, types of communication and objective of the study. In the second chapter, it describes the history of Aircel, Airtel, BSNL, Idea, Reliance, Tata Docomo, Vodafone subscriptions. Because the most of the people used this mobile subscription in Perambalur district. In the third chapter, Design and methodology were listed out. In the fourth chapter, several attributes were used. In that, subdivided bar diagram depicted the causes of satisfaction, un satisfaction and causes of recommendation. In that satisfactory perspective, Aircel network connection was liked by most of the people. In the same way, Idea, Reliance and Tata Docomo subscriptions were unsatisfied because of lacking behind the network coverage. In all that Vodafone subscription recommended highly, because of best tariff plan and fair network coverage. Comparative study was carried out by using multiple bar diagram. From that, satisfaction and un satisfaction of each and every subscription were analyzed. From the pie diagram, the percentages of using each and every mobile subscription were analyzed. By using chi- square test, the attributes are tested the paired attributes such as Age Vs Sex, Recharge amount Vs Salary, Mobile subscription Vs Mode of payment, Recharge amount Vs Occupation status, Salary Vs Mobile network are not independent. From the above results, we conclude that Perambalur people mostly used and also satisfied with Aircel supported moderately. Through, first performance was given to the Aircel; every mind was driven by Vodafone subscription. Hence, Vodafone is the topper subscription in the Perambalur district. Currently, there are some new subscription like Virgin, Uninor and Mts and becoming in the forth coming days.

References:

1. <http://www.tn.gov.in>
2. Statistical methods – Gupta. S.P
3. Statistical methods for biologists - S.Palanisamy

4. [http:// www.aircel.com](http://www.aircel.com)
5. <http:// www.bharathgrouppairtel.com>
6. <http:// www.bsnl.co.in>
7. <http://www.idea.co.in>
8. <http:// www.rcom.co.in>
9. <http://www.tatadocomo.co.in>
10. <http://www.vodafoneindia.co.in>
11. Probability and Statistics by A. Singaravelu, V. Sundaresan & S. Sivasubramanian
12. Applied Statistics, S. C. Gupta & V. K. Kapoor
13. Fundamental of Mathematical Statistics, S. C. Gupta & V. K. Kapoor

Appendix:

Analysis on Mobile Subscription in Perambalur District:

1. Name :
2. Age : ☐ Below 20-30 ☐ Above 30-50
3. Sex : ☐ Male ☐ Female
4. Address for Communication:
5. Mobile Number:
6. Occupation Status:
☐ Student ☐ Former ☐ Govt Employee ☐ PVT Employee ☐ Professional ☐ Others
7. Salary :
☐ Below 5000 ☐ 5000-8000 ☐ 8000-12000 ☐ Above 12000
8. What is your mobile network subscription?
☐ Aircel ☐ Airtel ☐ BSNL ☐ Idea
☐ Reliance ☐ Tata Docomo ☐ Vodafone
9. What is type of payment? ☐ Prepaid ☐ Post-paid
10. How much money do you spent monthly to recharge?
☐ Below Rs. 250 ☐ Rs.250-500 ☐ Rs.500-1000 ☐ above Rs.1000
11. Are you satisfied will the network? Yes/No
 a) If yes, How do you find it most useful?
☐ Free SMS ☐ Best Network Coverage ☐ Internet
☐ Good Customer Care Support ☐ Good Tariff Plan
☐ Easy to Recharge ☐ Add on Card Facilities
 b) If no, why do you say so?
☐ Bad Tariff plan ☐ No Proper Coverage ☐ Coverage for SMS
☐ Difficult to Recharge ☐ Bad Customer Care Support
12. What network will you recommend to your neighbour?
☐ Aircel ☐ Airtel ☐ BSNL ☐ Idea
☐ Reliance ☐ Tata Docomo ☐ Vodafone
13. What do you particularly recommend the network?
☐ Free SMS ☐ Best Network Coverage ☐ Internet
☐ Good Customer Care Support ☐ Good Tariff Plan
☐ Easy to Recharge ☐ Add on Card Facilities