Introduction

Internet and Mobile telephony impacted 20th generation people all across the globe and across all segments of people. Mobile technologies are shaping a new generation (Erickson, 2012). The Internet is used for several different activities along with commercial activities. It is a technology of freedom mentioned and defined by (Pool, 1973). The growth of Internet from the mid-1990s onward impacted study, knowledge, sharing communications, business etc. Electronic commerce channels are widely used by business world to interact with mobile subscribers and use more competitive advantage (Lee & Lin, 2005).

The Internet

The Internet creates an alternative of traditional market for customers and organizations. This new market is flexible, informative and easily expandable in short duration. The Internet organizations, web pages and mobile apps enable consumer and business provider to search information about product and services along with feedback, ratings and booking orders (Hoffman & Novak, 1996). A new marketing reality is opened up by the newly discovered communication and information technologies for all the Internet users (Xavier & Pereira, 2006). Market competition and product selling through the Internet took new heights and the completion between organizations changed the traditional way. All business houses understood the importance of the Internet and realized the importance of electronic commerce in business growth along with all aspects of business development by most of
the companies as mentioned (Shaw, 2006). Competition among business houses completely changed due to the Internet. Customers are much more knowledgeable due to the easy availability of information.

Thanks to the rising Internet penetration, more people are using digital technologies every day and are online more often and for a longer time. Marketers have started noticing these trends and a bigger budget of marketing spends is being allocated to digital media. Today, while the marketing for advertising spends overall in India is growing at 3% per year, digital advertising spends are growing at more than 10% and mobile advertising is growing at 50% per year.

Customer’s experiences of e-commerce shopping and marketing have turned into a new research subject and a new segment of e-commerce that is customer-created is expanding at a rapid pace. Different payment, shipping offers and easy bundling of multi-vendor products help business organizations to offer more to a customer. Now, business houses are able to extend a specific offer to a customer as per customer interest, locations, previous purchases and other several parameters. Most of the commercial activities take place over the Internet as it is the most dominating technology of this decade. Sale is the main target of commercial activities along with offering products and offers to targeted customers. It’s very important to analyze the online customer’s behavior and to promote products accordingly. So, it is important to inspect ecommerce buyer’s activities and preferences. Investigations of a customer’s behavior are required for developing and implementing effective marketing strategies. So, online business websites comprehend customer’s
needs and all possibilities by capturing and analyzing the interaction between online retailers and customer.

Twentieth century, the age of the Internet technology has influenced people’s lives in a very short span. Information and communication world has changed by rapid technological development in all aspects. E-commerce means that electronic commerce experiences were started with the use of Internet only for the commercial purposes. Electronic business e-market was developed to support business activities by only the execution of these information and communication technologies. Oxford Dictionary (2012) referred to electronic commerce defined that all the business transactions mean commercial transactions happened electronically on the Internet. All business transactions like trading, selling, comparing, buying, information gathering and exchanging of goods and services concluded over an electronic medium means over the Internet by shopper and business houses in absence of any face to face meeting is defined as Electronic – Commerce.

Mobile Data Service

A single device i.e. mobile phone most significantly impacts human behavior and lifestyle. Mobile phone is a device that has changed the ways of human communications. They are the most used devices today by all segments of people and not just limited to communication purposes. Now, mobile phones are not any luxury items, in fact, it’s a need. As prices are lowered due to technology advancement and competitions, so these days every person owns a mobile phone. Mobile handset is a basic necessity of life.
There are millions of people connected to the Internet through mobile phone at the same time and different mobile operators connect them all. In today’s life, mobile data service is the first priority for a major segment of a mobile subscriber. Mobile handset is the highest viewed screen in today’s life. Users check their mobile phones frequently. Also, they use their phones while watching television, hence, television has become the second most watched screen in human life.

Users glare at their mobile screens not only for the purpose of voice calls but also for instant messaging, group messaging, email, news and mobile applications’ update. So, there is a high demand for data service in terms of quality and coverage. Today mobile users are completely dependent upon their data service for business, leisure, tour, gaming, etc. Users expect high-speed data coverage in all locations including national and international roaming destinations.

Nowadays, data connection is used for booking a cab, searching hotels, guide on road by map, buying products online, getting information about news, games and products, listening to music, watching movies, accessing social media, group chats, payment towards merchant etc., so we can say that in every step of life users need mobile data service. Nowadays, users have connected their laptop and desktop tabs through mobile data connection like data card and hotspot (as popularly known).

According to latest Telecom Regulatory Authority of India (TRAI) communication (2018), total mobile subscribers of Global System for Mobile Communication (GSM), Code-Division Multiple Access (CDMA) and Long-
Term Evolution (LTE) have increased from 1131.01 MN by May 2018 to 1146.49 MN by June, 2018. It means 1.37% of monthly growth has been registered. In urban areas, wireless subscriptions have increased from 625.66 MN by May 2018 to 633.60 MN by June 2018 and in rural areas, during this month wireless customer base have also increased from 505.34 MN to 512.89 MN. In urban areas, monthly growth rates of wireless subscriptions were 1.27% and in rural areas, monthly growth rates of wireless subscriptions were 1.49%.

Density of wireless subscriber in India increased from 86.89 May, 2018 to 88.00 June, 2018. The Urban Wireless Tele-density increased from 151.82 by May, 2018 to 153.52 by June, 2018) and Rural density of wireless subscriber also increased from 56.81 to 57.63 in that period only. By the end of June 2018, the percentage of urban wireless subscribers was 55.26% and the percentage of rural wireless subscriber was 44.74%.

Figure 1 : Overall Tele Density

Source: TRAI Data
Quality, cultural aspects, social responsibility, references, group relation, family income level, age and gender apart from data service performance also influence these mobile users’ behaviors. In the liberalized Indian market customer retention, loyalty and satisfaction are crucial goals for telecom operators for best economic success. Mobile data service, quality coverage and cost also force users to go for number portability among different cellular operators.

Mobile number portability (MNP) request was submitted by four million one hundred ten thousands subscribers as per latest TRAI report published in the month of June 2018. Since the implementation of mobile number portability (MNP), cumulative MNP requests increased from 382.06 MN - May 2018 to 386.17 MN – June 2018.

The growth of telecommunications industry is the key focus sector for the financial growth in developing and developed countries. More and more number of network operators’ enormous technical progress and extreme rivalry helps to develop telecom sector very fast. In these consequences, monopoly rights got removed and the facility primarily cherished by government operated mobile service providers abolished. Telecommunication companies helped to increase economic importance and inspired many researchers to spend a lot of time on teaching and research for this sector (Szyperski & Loebbecke, 1999).

Accruing customers and connected with those subscribers to a particular telecommunication network for long-term manner with an operator is a big challenge for marketing strategy by telecom operators.
Telecommunication services links with the main operator is most important for the progress of the telecom service provider in aggressive markets in comparison to rest of the industry sectors (Wilfert, 1999) (Gerpott, 1998) (Knauer, 1998) (Harter Ripsam & Ruhl, 1997) (Allen & Hamilton, 1995). Analyst Kleiner Perkins Caufield Byers reviewed and discussed technology trends in 2008 and predicted mobile phone to overtake fixed Internet access by 2014. This was widely discussed and also made a headline.

Email is mostly used and adopted worldwide for business communications, promotional communications, notifications, alerts of transactions and all other type of promotional important communications. An email was earlier mostly operated from desktop or laptop however, as mobile devices are increasing, there is an easy accessibility of email service now, hence their access through mobile is increasing significantly. In 2018, 67.7 million more users accessed their email via mobile device in comparison of the number of users in 2013 those who accessed email from their mobile device. Email is an integral part of peoples’ lives and business email is consistently opened first on mobile on an average of 256%. Forty percent (40%) of people from the age group of 14-18 access their emails on mobile first. Whereas, twenty nine percent (29%) of the age group between 19–34 and eight percent (8%) of the age group among 56–67 years (Adestra Consumer Adoption & Usage Study, 2016) access their email on mobile device first. However, fifty five percent (55%) of consumers in the age group of 56-67 say that they do not access their email on their mobile device first. More email is read on mobile than on desktop email applications. According to status, fifty
five percent (55%) of email is now in a day accessed through mobile device (Litmus Email Analytics, 2016).

Figure 2: Growth and usage of emails on mobile

![Mobile email statistics: Growth and usage of email on mobile](image1)

Source: Email Monday (https://www.emailmonday.com/)

Figure 3: Opened emails on mobile

![Most emails are opened on mobile devices](image2)

Source: Email Monday (https://www.emailmonday.com/)

Nineteen percent emails open through desktop, twenty-six percent open through webmail and fifty-five percent email opens through
mobile (Litmus Email Analytics, 2016), whereas, in 2015, forty-five percent of emails were accessed through mobile, thirty-six percent through desktop and nineteen percent through webmail client (Adestra Top 10 email clients, 2015). Thirty-three percent emails are opened through mobile apps whereas, seventeen percent through webmail client and forty-eight percent via desktop (Freshmail, 2014). Fifty-six percent (56%) of total email accessed through by a mobile phone or tablet in the fourth quarter of 2015 compared to forty-four percent in quarter three of 2015 (Experian Quarterly email benchmark report quarter four, 2015). Mobile accounts for 35.12% to 3951% of all unique emails open over the course of 2014 in the Netherlands (DDMA National email benchmark, 2015). Mobile device is considered as a major device for opening an email. According to Kahuna data, eighty-six percent of emails in quarter one of 2016 was accessed on a mobile phone Kahuna the Kahuna Mobile Marketing Index (2016).

Seventy-five percent (75%) of Gmail users open and read their email from mobile phones. By May 2015, 900 million users base of Gmail declared in Google/TechCrunch I/O developers conference.
Figure 4: Industry wise usage emails

<table>
<thead>
<tr>
<th>Device/Email Client Usage</th>
<th>Webmail</th>
<th>Mobile</th>
<th>Desktop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>29%</td>
<td>49%</td>
<td>22%</td>
</tr>
<tr>
<td>Automobiles &amp; Transportation</td>
<td>29%</td>
<td>52%</td>
<td>19%</td>
</tr>
<tr>
<td>Banks &amp; Financial Services</td>
<td>39%</td>
<td>36%</td>
<td>24%</td>
</tr>
<tr>
<td>Computer Hardware &amp; Telecommunications</td>
<td>42%</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>Computer Software &amp; Online Services</td>
<td>23%</td>
<td>33%</td>
<td>45%</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>29%</td>
<td>45%</td>
<td>26%</td>
</tr>
<tr>
<td>Consumer Services</td>
<td>24%</td>
<td>51%</td>
<td>25%</td>
</tr>
<tr>
<td>Corporate Services</td>
<td>24%</td>
<td>52%</td>
<td>23%</td>
</tr>
<tr>
<td>Food Service, Sports &amp; Entertainment</td>
<td>29%</td>
<td>57%</td>
<td>14%</td>
</tr>
<tr>
<td>Hospitals, Healthcare &amp; Biotech</td>
<td>17%</td>
<td>55%</td>
<td>28%</td>
</tr>
<tr>
<td>Industrial Manufacturing &amp; Utilities</td>
<td>25%</td>
<td>42%</td>
<td>32%</td>
</tr>
<tr>
<td>Insurance</td>
<td>33%</td>
<td>39%</td>
<td>27%</td>
</tr>
<tr>
<td>Lodging, Travel Agencies &amp; Services</td>
<td>39%</td>
<td>41%</td>
<td>19%</td>
</tr>
<tr>
<td>Marketing Agencies &amp; Services</td>
<td>28%</td>
<td>54%</td>
<td>18%</td>
</tr>
<tr>
<td>Media &amp; Publishing</td>
<td>30%</td>
<td>51%</td>
<td>19%</td>
</tr>
<tr>
<td>Nonprofits, Associations &amp; Government</td>
<td>28%</td>
<td>45%</td>
<td>27%</td>
</tr>
<tr>
<td>Real Estate, Construction &amp; Building Products</td>
<td>25%</td>
<td>49%</td>
<td>26%</td>
</tr>
<tr>
<td>Retail &amp; Ecommerce</td>
<td>28%</td>
<td>49%</td>
<td>23%</td>
</tr>
<tr>
<td>Schools &amp; Education</td>
<td>37%</td>
<td>41%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Source: Email Monday (https://www.emailmonday.com/)

Smartphone

Smartphone means a phone handset with multiple features like GPS, Audio, Video, Playback, Camera and Web browsing with several other multimedia options accessible through a high-density display screen. Operating systems are the heart of smartphone; they only enable smartphones to operate and function like a desktop or a laptop. Mobile applications developed rapidly which interns helped in the birth of a new mobile applications market that enables a lot of functionality enablement through mobile platform, which is another main reason for people to adopt the
smartphone. IBM was the introducer of first ever smartphone Simon in the market in 1992-93.

Figure 5: Smartphone users in India (2013-2019) in millions

Source: Statista (https://www.statista.com/)

Worldwide smartphone users’ projections are around 2.7 billion by the end of 2019. One third of the total world’s community was using smartphones at the end of 2017. The United States of America is now far behind due to China’s speedy surge, the nation has become a main ruler in the smartphone market place.

In China, smartphone users are already accounted for one-third of the country’s population in 2013. Chinese’s populations are using smartphones more than half of its population in 2018. China approximately amounts to nearly six hundred eighty-eight million (688 MN) smartphone users by the end
of 2019. This data is very lucrative, in consideration that China is the world populous country.

In 2017, India crossed the number of smartphone users of The United States of America. In The United States, approximately 220 million people used a smartphone in comparison to 244 million smartphone users in India. Its nearly the double of 2014’s number showing India’s faster growth. However, The United States still has more smartphone growth rate than India. Twenty percent growth rates had already been achieved by The United States of America in 2010. In 2017, The United States’ smartphone penetration rate was 63.5 percent.

Figure 6: Smartphone Penetration rate In India

Source: Statista (https://www.statista.com/)

India in all aspects shares the features of global Internet users with the same passion for games, chat, tools, mobile apps and social media. Facebook is the most popular social media followed by Google+, Twitter and LinkedIn. Mobile service providers’ market place can be split by the different categories of services catered and by the mobile service providers for different services
like trunked mobile radio access, wireless radio telephony, paging and satellite services (Gerpott, 1998) (Knauer, 1998) (Stoetzer & Tewes, 1996).

Customer Satisfaction

Service quality is the main attribute which is strongly linked with customer satisfaction (Rust & Oliver, 1994) & (Fornel et al., 1996). For long-term, it is necessary for an organization to identify the service attributes which excite consumers and improve the performance of these attributes through resource allocation (Matzler et al., 2004). Satisfaction of customer works as a mediator among quality of service and customer behaviors. The model shown below indicates that CS enhances CR via frequent and enlarged buying (Manrodt & Davis, 1993); (Emerson & Grimm, 1998).

The blend of customer retention and loyalty might enhance profitability. There is a lot of evidence available to prove that satisfaction is primarily determined through quality of service by companies and from the perception of their consumers (Thompson, 2004); (Gronroos et al., 1996); (Xu et al., 2002); (Dyche, 2001); (Ryals & Knox, 2001); (Stone, 2000). The researchers have also described the need of communicating, distributing developing and enhancing the service quality to the consumers.

Figure 7: Service Quality Attributes

![Service Quality Attributes Diagram](image_url)

Source: - (Matzler et al., 2004)
Telecommunications in India

In 1994, cellular licenses were awarded to the private sector and mobile revolution was started in India. Now, the Indian telecommunication market place is the second biggest market place in terms of a mobile users’ base. Telephony, Internet and broadcasting are the major sectors of the Indian telecommunication industry. Since 1990s, telecommunications market of India experiences a large step of liberalization and as of current situation it has become the highest aggressive and one of the rapid expanding telecom markets in world's telecommunications market place. The Indian government published a new telecommunication guideline in 1994 that thrust upon the basic telecommunications service to the private business houses. Telecom Regulatory Authority of India (TRAI), the domestic regulatory and policy making body for both wireless and wire line mobile telecommunications was formed in February 1997. TRAI was formed to monitor India’s telecommunications services and resolve all issues between Department of Telecommunications (DOT) and private owned operators.

The top mobile operators in the Indian mobile service providers are Reliance JIO, Bharti Telecom (Airtel), Vodafone, Aircel and Idea Cellular. Cheap handsets availability and the launch of mobile value-added services (VAS) have added to heavy adoption and usage of mobile phones. The mobile service providers market is the major crucial sub-market for mobile service providers in terms of business, profits, earnings and the number of subscribers tangled. This works focuses on this data part of the mobile service providers market in India. Due to huge competition among mobile service providers they promoted very good network coverage and high network availability
within a cutthroat price range. The mobile service providers market is split into residential and business customers on the interest side. Business subscribers along with residential subscribers market are included in this research work.

Problem Statement

Nowadays Internet, computer, handheld devices and mobiles have been essential things for our day-to-day activities in partnership with the fastest development of technology and knowledge. People have started searching everything they want from this new technology medium i.e. Internet. Typically it is a common practice of collecting data and information. These technologies dominate in a big way in our social life and business life, which is mostly accessible through mobile handset and mobile data service provider.

The academic researchers started to focus on the customer retention, loyalty and satisfaction and in respect to mobile operator data service performance and influence. This sort of analysis is significant to mobile service providers to understand customer mobile data usage pattern and dependency in daily life. Mobile service providers’ success also influenced mobile operators’ data service performance apart from traditional voice calls and SMS service.

Technology advancement in the field of mobile communications and the introduction of smartphone created this opportunity to study mobile data service effect on consumer’s behavior. Previous research papers discussed and studied customer retention, loyalty and satisfaction based on several service
parameters of mobile service providers however, there is a no significant study found on data service performance and effect on customer retention, loyalty and satisfaction. This study explores the usage pattern of mobile data service and its effect on customer loyalty, retention and satisfaction.

Research Questions

1. What is the usage pattern of mobile data services?
2. What are the factors that influence users?
3. How these factors are influencing customer satisfaction, loyalty and retention?
4. Whether Mobile Data Service (MDS) performance factors in customer retention, loyalty and satisfaction? If yes, then how much?

Research Objectives

The study is based upon mobile data service performance and effect on customer retention, loyalty and satisfaction in India. The objectives flowing out of the title will be:

- To study the usage pattern of mobile data services.
- To determine the factors related to the usage of MDS influencing customer loyalty, retention and satisfaction.
- Mobile data service performance and its association with customer retention, loyalty and satisfaction.
Justification of the Study

Mobile data service performance is the key need of today’s mobile users and as a society we are going towards digital world through cashless payment. “On the go” accessing of services like social media, chat, map for road direction, cab booking, hotel booking, buying, comparing, feedback, kids school, etc all are today’s mobile users’ needs which are completely dependent upon mobile data services apart from traditional email and web browsing. The researcher did not study the effect of mobile data service on customer retention, loyalty and satisfaction earlier. Several papers discussed and studied consumer retention, loyalty and satisfaction based on several service performances of mobile data service provider but there isn’t any significant study found on data service performance and effect on customer retention, loyalty and satisfaction.

Concluding Remarks

In the development of India, significant contribution has been made by telecommunication sector. The current study has been conducted in this area with an aim to improve the quality of telecommunication along with mobile data service performance by highlighting the behavioral intentions of customer. The study also investigates the relationship of service quality with consumer loyalty, retention and satisfaction. Additionally, it also investigates the impact of customer demographics and usage pattern of data service. The chapter highlights the objectives and significance of the study. The hypotheses developed for the exercise are also presented.