



A Comparative Study of Different File Sharing Applications and Wi-Fi Direct Technology for File Sharing

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Abstract : The government of India recently banned Chinese application because of security implication of Indian users data and also with another collaborative aim to lead India to digitalization and self-reliance 'Atmanirbhar Bharat' made the decision to ban the Chinese application from Indian Google Play store. In this list of apps ShareIT and Xender which had become a part of regular activities of many people, used for File transferring purpose. This application was meant for sharing different formats of files among devices. Despite other alternative Indian file sharing applications users faced inconveniences as these application were less satisfactory in comparison with banned apps like the ban of ShareIT and Xender. This paper shows studies of various Indian and non-Indian file/data Transferring applications and a comparative study of the various features provided by them. This paper also focuses on the study of WIFI Direct technology which is used for file sharing, connecting among devices.

Keywords – File sharing technology, peer to peer, Wi-Fi, Wi-Fi Alliances, Wi-Fi Direct

I. INTRODUCTION

Introduction Indian Government made a decision in July 2020, according to the 'Atma Nirbhar Bharat' initiative the IT ministry has banned 59 Chinese owned applications, including ShareIt, Xender, Cam Scanner, Tik Tok, etc were removed from the play store for sovereignty and security. From this list of banned apps ShareIT and Xender which has been an integral part of regular activities of the people, for File sharing. This application was meant for sharing any format of files or data from one device to another. Since this application was responsible for data transfer it may have sensitive data of the users, so it was banned to keep data of the Indian public secure. This ban took place during the Coronavirus pandemic and where we are left with no option but to switch using e-documents and work from home, most activities are happening online which includes school and college work, online industry work, online conferences, meetings, seminar, workshop, online registration of exams, online hiring of employees and many more. For all these, we use data and files which we have shared with our clients, colleagues, friends, business partners, and even for daily use sharing movies, songs, images for entertainment purposes need Indian File sharing application. This led to the need for a file-sharing application and more importantly, India originated application, nearly comparable to ShareIt. After this, several Indian versions of file-sharing applications were developed but those were unable to meet the requirements of the users and had a low performance in the file-sharing speed and establishing connection among devices or lesser functionalities. A good file-sharing application is to have basic features along with an Indian origin as there is the chance of the same security implication with a non-Indian application and it may pose a risk to sensitive data traded out of the country. With this, the success rate of the application depends solely on the maximum features it can provide with the basic ones being able to meet the requirements of users. Many Indian versions of file-sharing applications have drawbacks like transfer speed, has connection difficulty, some apps do not have QR scan codes, original files are compromised while sharing, and shared files are not stored in the proper destination folder. The proposed system is completely safe as it does not invade your privacy by accessing the permissions without your consent and does not access irrelevant or sensitive information.



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II. LITERATURE SURVEY

JioSwitch [1], is a Cross-Platform data transfer application supporting transfer in IOS and android devices. Sharing is easy with a simple graphical user interface that gives 100 times more transfer speed compared with traditional Bluetooth. It supports a large variety of file transfer irrespective of their file format and file size. This application works without an internet connection making it unique and saving our valuable internet data. Drawbacks of this application are:

1. The shared files are not stored in the proper folder which makes them difficult to find.
2. While sharing files the quality and size may get changed on the receiver end which results in distortion of a shared file.
3. It does not support application (Apk file) format transfer.
4. It does not support QR Scans for connecting devices.

SuperBeam [2], is a file-sharing app supporting the easiest way to transfer. And gives multiple options for users to connect devices with QR scans, NFC (Network File Transfer), and manual sharing key. SuperBeam is a cross-platform app using Wi-Fi Direct for file sharing which works even without an internet connection. This app can share single or multiple files of any type and size, it also keeps the file transfer history of users. If some of the devices do not support Wi-Fi Direct, then it automatically switches to the hotspot. In case of Wi-Fi direct failure, it can use the existing Wi-Fi network to make connections between devices making it highly compatible. SuperBeam has different themes like dark and AMOLED Modes.

Drawbacks of this application are:

1. It is not supported in all versions.
2. It does not support QR Scans for connecting devices.
3. While file sharing problems like file duplicity is faced

Garud-Indian file transfer [3], is an android supported file sharing application. Any type of file on your Garud File Transfer, be it Movies, Music, Apps, Photos, and many more can be shared. The sharing is easy because of the friendly graphical user interface and quick QR scan codes. With Garud File Transfer, No Internet or USB Cables are required to complete the file transfer. It gives transfer speed up to 40 Mbps. It gives an ad-free experience. It has a special feature to secure the file transfer with a randomly generated passcode which is only by the receiver phone.

Drawbacks of this application are:

1. It does not support cross-platform file sharing
2. Shows error when used QR Code for connecting devices.
3. It does not show names of files while sharing which makes it difficult for a user to identify the files.

MX ShareKaro [4], is an android File transferring App. It ensures that users experience Easy sharing of files without the need for any Internet connection. It can share all types of files like images, videos, audio, and even installed applications on the phone. It also supports sharing mobile contacts with receivers. It supports 10 different languages such as Hindi, Marathi, English, Gujarati, Telugu, Tamil, Kannada, Malayalam, Bengali, and Punjabi. It claims to give a complete and ad-free experience while using the application. It allows users to receive files such as jiffy. While sharing a large size of files the data of the file is protected from being lost in the transfer process.

Drawbacks of this application are:

1. The app is not cross-platform supported.
2. It does not support QR Scans for connecting devices.
3. It does not allow multiple file transfer at a time.

Send Anywhere [5] is file transfer application, allowing all types of file with all types of devices for sharing. The sharing is easy because of friendly layout and quickly connecting QR scan codes are available. With Share Anywhere File Transfer, No Internet or USB Cables are required to complete file transfer. It gives transfer speed upto 40 Mbps. Share Anywhere is an advertisement free application. It has a special feature to secure the file



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transfer with a randomly generated passcode which is only by the receiver phone.

Drawbacks of this application are:

1. It does not support sharing of large files.
2. It compromises on QR scan for connecting devices
3. It does not support multiple file or folders sharing.

Easy Share [6], is a file-sharing application. It works on Wi-Fi P2P technology. So no cellular or mobile data is used during file transfers. It supports transfer speed up to 20M/s. It can share all types of files like images, videos, audios, and even installed applications on the phone. The sharing is easy because of the friendly graphical user interface and quick QR scan codes. Easy Share is a free forever application. It has a special feature of backing up your installed apps to the SD card automatically.

Drawbacks of this application are:

1. It compromised the Privacy of users, by accessing unnecessary permission on the user's phone.
2. It does not support QR scans for connecting devices.
3. It does not support the transfer of files stored in the SD card of the phone.

Direct Transfer Contacts/Files [7], is Cross-Platform Contacts and File transfer application, supporting transfer in IOS and android devices. Sharing is easy as it has a simple graphical user interface that gives 100 times more transfer speed compared to traditional Bluetooth. Direct Transfer Contacts/Files supports a large variety of file transfer irrespective of their file format and file size. This application works without an internet connection making it unique and saving our valuable internet data.

Drawbacks of this application are:

1. The app is not free it requires a user to buy a premium pack to share large files at great speeds
2. It does not have user-friendly GUI
3. It does not allow multiple files transfer at a time.

InShare [8], is a Cross-platform file Sharing android application supporting file transfer with Android, iOS, Jio Phone, KaiOS, Mac, Windows, etc. Share audios, videos, apps, and all types of files. During sharing no mobile data or network connection is needed. Offers sharing of multiple files or folders at a time. It has the feature of file manager which allows users to sort or search shared files easily. It gives transfer speed up to 40 Mbps. It's an ad-free application. Inshare supports over 30 languages. It has a feature called Smart replication which transfers all data from an old phone to a new one easily.

Drawbacks of this application are:

1. With every transfer hotspot name changes, makes it difficult to identify for users.
2. It compromises on transfer speed.
3. It does not allow to change the default file storage directory

ShareAll [9], is a file Sharing android application supporting all types of file transfer such as audios, videos, images, etc. The sharing is easy because of the friendly graphical user interface and quick QR scan codes. With Easy Share File Transfer, No Internet or USB Cables are required to complete the file transfer. ShareAll is an ad-free application.

Drawbacks of this application are:

1. It does not have the option to transfer files from an SD card or External Storage.
2. The application has too many advertisements disturbing the user's experience.
3. The UI is not user friendly and many basic features such as setup profile don't support.

ShareMe [10], is a file sharing application which supports all kinds of files to transfer such as videos, audios, android apps, images and many more. Files can be shared without using the Internet, resulting in the saving of internet data. ShareMe transfers files fast, 200 times faster than Bluetooth. Send large files without any limitation of size. It gives an ad-free experience to the users. If any sudden error occurs during transferring of files then it



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can resume easily with a simple tap without starting over. The app supports multiple languages as such Chinese, English, Espanola, Portuguese, etc.

Drawbacks of this application are:

1. It does not support the smooth transfer of large files.
2. It does not support QR scans for connecting devices.
3. The user faces too many interruptions while sharing.

Chat and File Transfer Android Application Using WIFI-DIRECT[11], Wi-Fi Direct technology allows an application to quickly search for all the nearby available devices and interact them. The range of Wi-Fi direct is more than a traditional Bluetooth. This android application lets users communicate freely using Wi-Fi-Direct technology by a company called Wi-Fi alliance to enhance direct communication among devices without any need for a wireless access point. Wi-Fi direct is made for temporarily connecting a few devices in an easy-to-use and secure way, for communication and file sharing

Wi-Fi Direct (peer-to-peer or P2P) Overview[12], Wi-Fi Direct supports devices with API level 14 or above, can easily create peer-to-peer connections and share files among the devices. Compared to Bluetooth, it provides a fast connection between devices with a much more higher range of up to 100 m distance. It can share data up to the speed of 2.5 to 3.0 Mbps, and uses WPA2 secured encryption protection.

Wi-Fi direct - Android Local Networking[13], Wi-Fi becomes an easy way of communicating wirelessly, like Bluetooth. Wi-Fi Direct has unique feature of automatically discovering all the available nearby devices and then easily connecting to them. To make Wi-Fi Direct connections between devices there are various ways like by scanning a QR code, entering PIN number. Pressing buttons to make a connection request. When two devices connect, they automatically connect via Wi-Fi Protected Setup, Wi-Fi Direct enabled devices uses WPA2 encryption method for securing data transfer.

What Is Wi-Fi Direct, and How Does It Work [14], A Wi-Fi Direct device can essentially function as an access point, and other Wi-Fi-enabled devices within the range connects directly to it. A Wi-Fi direct peer group is created by a single group owner and other Wi-Fi-enabled devices connects in the group. The owner device in the group has privilege to sets some properties for communication like operating channels, persistent of a group, and mode of encryption used, etc.

Steps Followed in Wi-Fi Direct to Connect Devices-

1. Discovering Peers
2. Getting Peer list
3. Connecting with a peer

How to Transfer Files Using Wi-Fi Pair Connection in Android [15], WifiP2pManager class which is used to interact with the Wi-Fi hardware on our device which helps in connecting and discovering the peers.

WifiP2pManager class provides some methods for peer-to-peer connection.

1. Initialize (): This method registers the application within a Wi-Fi framework, and it is called before calling any other Wi-Fi P2p methods.
2. Connect (): This method is used to start a Wi-Fi pair connection within a device.
3. DiscoverPeers (): This method is used to detect all the available peers that are in the range.
4. CancelConnect (): This method is used to cancel all the connected Wi-Fi pair connections.



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III. ANALYSIS TABLE

Table 1 summarizes the review study of a few File Sharing applications that will be used to design the application.

Table 1: Analysis table

Sr. No	Reference	Advantages	Limitations
1.	Jio Switch-Transfer files & Share It	It supports Cross-Platform file sharing app, works without internet and saves your data	While sharing files the quality and size of files gets affected.
2.	SuperBeam-Wifi Direct share	share It gives multiple options for users to connect devices with QR scans, Network File Transfer(NFC), and has a manual sharing key feature.	While file sharing problems like file duplicity is faced.
3.	Garud-Indian File Transfer ,share files	share files Higher transfer speed of upto 40 Mbps, smooth as butter.	Shows connection error while using QR Scan Code
4.	MXShare karo	It also supports sharing mobile contacts with receivers.It supports 10 different languages.	The app does not support cross-platform file transfer..
5.	Send Anywhere	It offers secure file transfer with a randomly generated passcode which is only by the receiver phone	It does not support large files transfer.
6.	EasyShare- Ultra Fast file Transfer	It backs up your installed apps to the SD card automatically.	It compromised the Privacy of users, by accessing unnecessary permission on the user's phone.
7.	Direct Transfer Contact/Files	It supports a large variety of file transfer irrespective of their file format and file size.	The app is not free; it requires a user to buy a premium pack to share large files at great speeds.
8.	InShare-Share App and File Transfer	It has the feature of file manager which allows users to sort or search shared files easily	With every transfer hotspot name changes, makes it difficult to identify for users.
9.	ShareAll: File transfer & share with everyone	It transfers files fast, 200 times faster than Bluetooth	It does not supports files transfer from a External Storage.
10.	ShareME-India best File sharing & transfer app	If any sudden error occurs during transferring of files then it can resume easily with a simple tap without starting over	It does not support the smooth transfer of large files.The user faces too many interruptions while sharing.



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11.	Chat And File Transfer Android Application Using Wi-Fi-Direct	Direct Wi-Fi Direct supports wireless file sharing, with connected devices in a network	Wi-Fi Direct supports only in android devices to connect for temporary file sharing.
12.	What Is Wi-Fi Direct, and How Does It Work?	It supports transfer data up to the speed of 2.5 to 3.0 Mbps.	Wi-Fi Direct supports devices with API level 14 or above.
13.	Wi-Fi direct – Android Local Networking	Wi-Fi Direct supports various ways like scanning a QR code, entering PIN number. Pressing buttons to make a connection request.	Wi-Fi Direct supports connecting of a devices within the range of 100 meter.
14.	How to Transfer Files Using Wi-Fi Pair Connection in Android	It uses WPA2 encryption for secure transfer.	The owner device in the group has privilege to sets some properties for communication like operating channels, persistent of a group, and mode of encryption used, etc.
15	Wi-Fi direct – Android local networking	WPS and WPA2 are used for encryption and keep the communication private.	It allows only limited devices to connect.

IV. METHODOLOGY

The proposed system uses Wi-Fi direct technology for file sharing among peers. Wi-Fi Direct becomes an easy way of communicating wirelessly, like Bluetooth. Compared to Bluetooth it is much faster with a much higher range of up to 100 meters of the radius. Wi-Fi Direct allows to quickly search for all the nearby available devices and interact them. To make Wi-Fi Direct connections between devices there are various ways like scanning a QR code, entering PIN number. Pressing buttons to make a connection request. WifiP2pManager class serves as an interaction medium with Wi-Fi hardware of our device which helps in connecting and discovering the peers. Using Wi-Fi direct technology data can be transferred up to the speed of 2.5 to 3.0 Mbps Wi-Fi direct using WPA2 secured encryption protection while sharing data.



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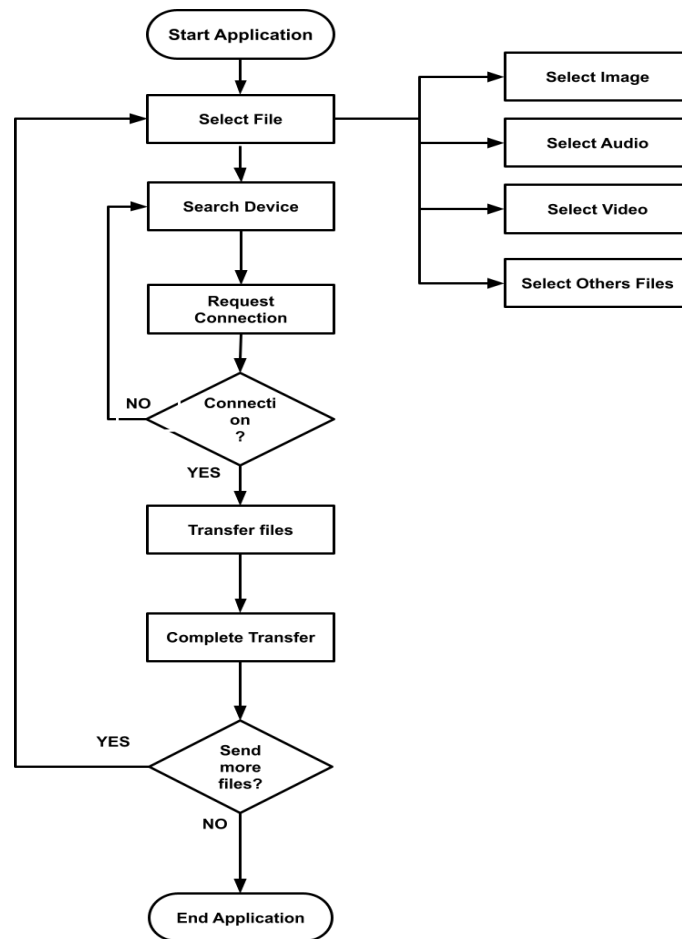


Fig.no.1- System Flow Chart

The fig.1 depicts the system flow diagram of the proposed system. The user (sender) selects the file which has to be sent to the receiver, after the selection of the file is complete sender requests for connection using options of QR code or using Wi-Fi Hotspot. The receiver within the range gets a connection request and once the receiver accepts the connection request they are connected and file sharing starts. When the transfer is completed the user can view the shared or receive files in the history.



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VI. CONCLUSION

The need for an Indian File sharing application increased tremendously after the ban of Chinese applications ShareIT and Xender. A user's reliance on these ban file sharing resulted in the development of many Indian versions of file sharing applications but they lacked user's requirements or were incompatible for the user. The proposed system offers sharing of a variety of file formats like documents, images, an audio file, video clip, Apk, etc. Also, good file transfer speed, easy connectivity among devices, User-friendly self-explanatory UI allows users to app with ease. It also provides key features such as QR scan and Ads-free experience to the users. Thus, the application will be able to meet user requirements.

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REFERENCES

- [1] Jio Switch-Transfer files &ShareIt, https://play.google.com/store/apps/details?id=com.reliance.jio.jioswitch&hl=en_IN&gl=US , Last accessed 19/08/2020
- [2] SuperBeam-Wifi Direct share, https://play.google.com/store/apps/details?id=com.majedev.superbeam&hl=en_IN&gl=US, Last accessed 19/08/2020
- [3] Garud-Indian File Transfer, share files, <https://play.google.com/store/apps/details?id=garud.file.transfer.sharing.app&hl=en&gl=US>, Last accessed 19/08/2020
- [4] MXShare Karo, <https://play.google.com/store/apps/details?id=com.mxtech.videoplayer.share>, Last accessed 19/08/2020
- [5] SendAnywhere, https://play.google.com/store/apps/details?id=com.estmob.android.sendanywhere&hl=en_IN&gl=US, Last accessed 19/08/2020
- [6] EasyShare- Ultrafast file Transfer, https://play.google.com/store/apps/details?id=com.vivo.easysshare&hl=en_IN&gl=US , Last accessed 19/08/2020
- [7] Direct Transfer Contact/ Files, https://play.google.com/store/apps/details?id=com.cybervalue.contacttransfer2&hl=en_IN&gl=US, Last accessed 19/08/2020
- [8] InShare-Share App and File Transfer, <https://play.google.com/store/apps/details?id=sharefiles.sharemusic.shareapps.Filetransfer&hl=en>, Last accessed 19/08/2020
- [9] ShareAll:File transfer & share with everyone , https://play.google.com/store/apps/details?id=com.loku.parralel.share.data.filetransfer.sharingfree&hl=en_IN&gl=US, Last accessed 19/08/2020
- [10] ShareMe-India best File sharing & transfer app, https://play.google.com/store/apps/details?id=com.xiaomi.midrop&utm_source=www.apk4fun.com, Last accessed 19/08/2020
- [11] Pawan Shri Kondawar, Hatim Bharmal, and Abhishek Kommara, 'Chat and File Transfer Android Application Using WiFi-Direct', International Journal of Modern Trends in Engineering and Research (IJMTER)-May-2018
- [12] <https://developer.android.com/training/connect-devices-wirelessly/wifi-direct>, Last accessed 20/08/2020
- [13] <https://www.talentica.com/blogs/wifi-direct-android-local-networking>, Last accessed 25/08/2020
- [14] <https://acadgild.com/blog/how-to-transfer-files-using-wi-fi-pair-connection-in-android>, Last accessed 03/09/2020
- [15] <https://www.howtogeek.com/178691/htg-explains-what-is-wi-fi-direct-and-how-does-it-work>, Last accessed 10/09/2020