

Study on Acceptance of ‘Search Results Web results Aarogya Setu’ Mobile Application

By

Afraz Hussain

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2018-2020



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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **A study on ‘Aarogya Setu’ mobile application** and submitted by **Afraz Hussain**, Enrollment No: **IIHMR-U/01/2018-20/0705** under the supervision of **Dr. Arindam Das** for award of **MBA in Hospital and Health Management** of the University carried out during the period from **13th March 2020** to **12th June 2020** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



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MBA-Hospital & Health Management

ABSTRACT

Background

Aarogya Setu is a mobile application developed by the Government of India to connect essential health services with the people of India in our combined fight against COVID-19. The App is aimed at augmenting the initiatives of the Government of India, particularly the Department of Health, in proactively reaching out to and informing the users of the app regarding risks, best practices and relevant advisories pertaining to the containment of COVID-19. The study aims to find out acceptance of the application among people.

Methodology

A structured questionnaire was provided to the respondents on awareness of the application, utilization of the application and reasons for not using the application if the respondents are not utilizing it. The questionnaire is sent via google forms and the specific objectives of the study is to analyse the acceptance level of Aarogya setu mobile application, to study the factors the prevent the use of Aarogya setu mobile application, and to give suggestions to improve the utilization of the application. About 385 respondents were included in the survey.

Results

The survey finds that majority of the respondents are aware of the Aarogya Setu mobile application and they are utilizing it and are willing to recommend their friends and family members to use this app. Although some of the respondents have uninstalled that application and a considerable percentage of the respondents of the respondents have not installed the application at all. The survey finds our behavioral aspects and also issues related to individual's data privacy of the application as major reasons that's stopping people the use of this application. But overall the application has received a good acceptance among the public.

ACKNOWLEDGEMENT

With immense pleasure I present my report as a part of my dissertation. I would like to thank all the people who gave me enormous support.

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LIST OF ABBREVIATIONS

APP	Application
COVID	Corona virus disease
CI	Confidence Interval
GoI	Government of India
Mohfw	Ministry of health and family welfare
Meity	Ministry of electronics and information technology
MBA	Master's in Business Administration

INTRODUCTION

The Corona virus disease which originated in Wuhan province of China was declared by WHO as a Public Health Emergency of International Concern on 30 January 2020. On 11 February 2020, WHO announced a name for the new coronavirus disease: COVID-19. The pandemic has affected more than 6 million people globally within four months of official declaration by WHO and killed more than three lakh people globally within the same time period. This is the biggest public health threat in the past 100 years. In the absence of effective treatment or vaccination (as of May 31, 2020), public health countermeasures have so far relied on non-pharmaceutical measures to limit the spread of epidemics, such as physical alienation, case isolation and manual contact tracking. Countries have partially or totally undertaken blockade measures to restrict social and economic transactions to curb the spread of disease, even at the expense of economic losses.

Traditional methods are difficult to trace COVID-19, because COVID-19 cases are infectious 1-2 days before the onset of symptoms, and become infectious on average 3-4 days after exposure [1]. Therefore, the window for containment through manual contact tracking is very short. Ferretti, Wymant and colleagues proposed an alternative method of digital (application-based) contact tracking to control epidemics without the cost of huge blockade costs. In addition, contact tracking is considered to be the first and most effective step to contain the outbreak, because large-scale testing and large amounts of vaccine resources are extremely unlikely to be used immediately. Effective contact tracing can reopen society, even before it gets a vaccine. The purpose of mobile contact tracking is to speed up the contact tracking process based on manual interviews to control outbreaks efficiently and quickly.

Recently, several countries announced plans to develop various types of contact tracking applications, and some countries have launched an application, such as Singapore [2]. However, the success of application-based contact tracking depends largely on whether people are willing to use the application. Hinch and colleagues [2] simulated the epidemic in the UK and showed that the app can reduce infections at all levels of consumption, but it is sufficient to stop the epidemic only when it is used by about 60% of the population. Therefore, it is important to assess the public's support for this approach and understand the factors that may hinder or promote adoption. For example, because the app needs to track

individual interactions with others, privacy issues may undermine support and adoption [3]. This technical solution may also not be suitable for populations with low digital literacy, further exacerbating the unequal impact of the COVID19 pandemic within and between countries. In this sense, the "opt-out" installation strategy (mobile phone providers or Apple and Google will automatically install the application on the phone) can maximize user acceptance. However, it is not clear whether the public is willing to support this more intrusive solution [2].

Aarogya Setu is the Indian COVID-19 "Contact Tracking, Symptom Mapping and Self-Assessment" digital service, mainly a mobile application developed by the National Information Center under the Ministry of Electronics and Information Technology. The intended purpose of the app is to spread the awareness of COVID-19 and connect the basic health services related to COVID-19 with the Indian people. This application enhances the plan of the Ministry of Health to include COVID-19 and share best practices and recommendations. This is a tracking application that uses the GPS and Bluetooth capabilities of a smartphone to track coronavirus infections. The application is available for Android and iOS mobile operating systems. With Bluetooth, it can try to determine whether a person is close to the person infected with COVID-19 (within six feet) by scanning a database of known cases across India. Using location information, it determines whether a location belongs to one of the infected areas based on available data [5].

The study conducted intended to find out the acceptability of the Aarogya Setu mobile application among citizens of India and analyse the possible reasons that hinders the use of the application by smartphone users within in the country.

LITERATURE REVIEW

Literature 1:

(Samuel Altmann et al., "Acceptability of app-based contact tracing for COVID-19: Cross-country survey evidence", medrxiv. 2020 March)

The study was undertaken by Samuel Altmann, Luke Milsom, Hannah Zillesen, Raffaele Blasone, Frederic Gerdon , Ruben Bach, Frauke Kreuter, Daniele Nosenzo, S´everine Toussaert and Johannes Abeler. The objective of this study is to investigate user acceptability of a contact-tracing app in five countries hit by the pandemic. The study was conducted in France, Germany, Italy, UK and USA. They found strong support for the app under both regimes, in all countries, across all sub-groups of the population, and irrespective of regional-level COVID-19 mortality rates. They investigated the main factors that may hinder or facilitate take-up and found that concerns about cyber security and privacy, together with lack of trust in government, are the main barriers to adoption. In the study they conclude that Epidemiological evidence shows that app-based contact-tracing can suppress the spread of COVID-19 if a high enough proportion of the population uses the app and that it can still reduce the number of infections if take-up is moderate. Their findings show that the willingness to install the app is very high. The available evidence suggests that app-based contact tracing may be a viable approach to control the diffusion of COVID-19.

Literature 2:

(Aaqib Bashir Dar et al., " Applicability of Mobile Contact Tracing in Fighting Pandemic (COVID-19): Issues, Challenges and Solutions ",Researchgate, 2020 April)

This study was conducted by Aaqib Bashir Dara, Auqib Hamid Loneb, Saniya Zahoorb, Afshan Amin Khan and Roohie Naazb. In this study they throw light on some of the issues and challenges pertaining to the adaption of mobile contact tracing for fighting COVID-19. In essence they proposed an Evaluation framework for mobile contact tracing solutions to determine their feasibility and effectiveness. They evaluated some of the available contact

tracing solutions in light of their proposed framework. Furthermore they presented possible attacks that could be launched against contact tracing solutions with necessary countermeasures to thwart any possibility of such attacks.

Literature 3:

(Luca Ferretti et al. "Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing". en. In: Science, 2020 March. issn: 0036-8075, 1095-9203. doi: 10.1126/science.abb6936.)

This study was done by Luca Ferretti et.al. The study analyzed key parameters of epidemic spread to estimate the contribution of different transmission routes and determine requirements for case isolation and contact tracing needed to stop the epidemic. Although SARS-CoV-2 is spreading too fast to be contained by manual contact tracing, it could be controlled if this process were faster, more efficient, and happened at scale. A contact-tracing app that builds a memory of proximity contacts and immediately notifies contacts of positive cases can achieve epidemic control if used by enough people. By targeting recommendations to only those at risk, epidemics could be contained without resorting to mass quarantines ("lockdowns") that are harmful to society. They discussed the ethical requirements for an intervention of this kind.

Literature 4:

(Johannes Abeler et al. "COVID-19 Contact Tracing and Data Protection Can Go Together". en. In: JMIR mHealth uHealth, April 2020, e19359. doi: 10.2196/19359.)

This study was carried out by Johannes Abeler et.al. The study discusses about the implementation of app-based contact tracing to control the coronavirus disease pandemic and discuss its data protection and user acceptability aspects. The study states that the effectiveness of any contact-tracing system depends on public support. There is reason to believe that the level of support can be increased by opting for a data-minimizing solution. A representative survey across the United States, United Kingdom, Germany, Italy, and

France shows that about 70% of respondents would install an app like the one described above on their phones. The reason most frequently brought up against an installation is the worry that the government could use the app as an excuse for greater surveillance after the end of the epidemic. If the government wants as many people as possible to install the app, it should take these concerns seriously and refrain from using location data. Contact tracing works without it.

METHODOLOGY

Type of Research:

Present study is descriptive cross-sectional in nature.

Research Question:

- 1.What is the acceptance level of Aarogya setu mobile application?
- 2.What are the factors that prevents the use of Aarogya setu mobile application?

Specific Objectives:

- 1.To study the acceptability of Aarogya setu mobile application.
- 2.To study the factors the prevent the use of Aarogya setu mobile application.
- 3.To give suggestions to improve the utilization of the application.

Study Population: People with access to smart phones are included in the study.

Sample size: 385

Sample size is calculated using the formula[6]:

$$\text{Necessary Sample Size} = \frac{(\text{Z-score})^2 \times \text{StdDev} \times (1-\text{StdDev})}{(\text{margin of error})^2}$$

For infinite population with 95% Confidence interval and 5% error, the required sample size according to the above-mentioned formula comes to be 385.

Sampling technique:

Purposive sampling was used for the present study. The author selected respondents who were using smartphones and who understood English language to respond the questionnaire which were sent to them via online platform hence people who were not able to understand English language and did not use smartphones were rejected.

Study Tool and Data collection:

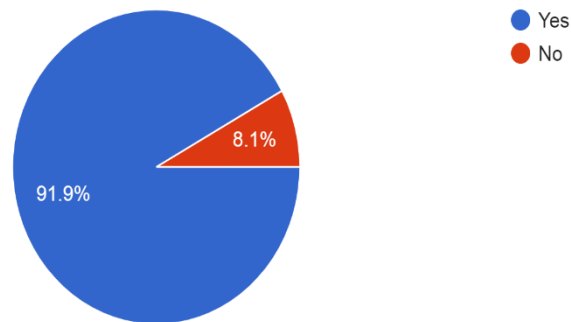
A structured questionnaire was created by the author for people who have downloaded the Arogya Setu mobile application and also for respondents who have not installed the application. Questions also included those respondents who have once downloaded the application but later uninstalled the same. The questionnaire was made using Google forms and it has been sent to the respondents via WhatsApp mobile application and email for better reach.

Data Analysis:

Data was entered in MS Excel. Both numerical and categorical variables were summarized using frequency, percentages and presented in suitable charts.

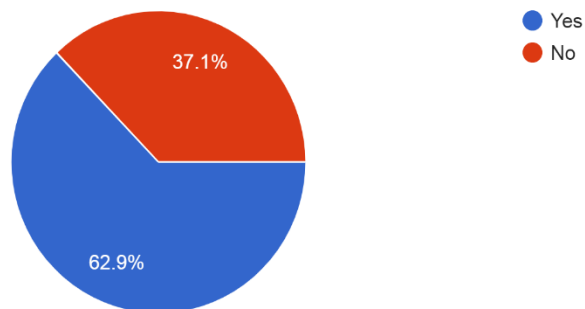
RESULTS

Figure 1:
Are you aware of 'Aarogya Setu' mobile application?
385 responses



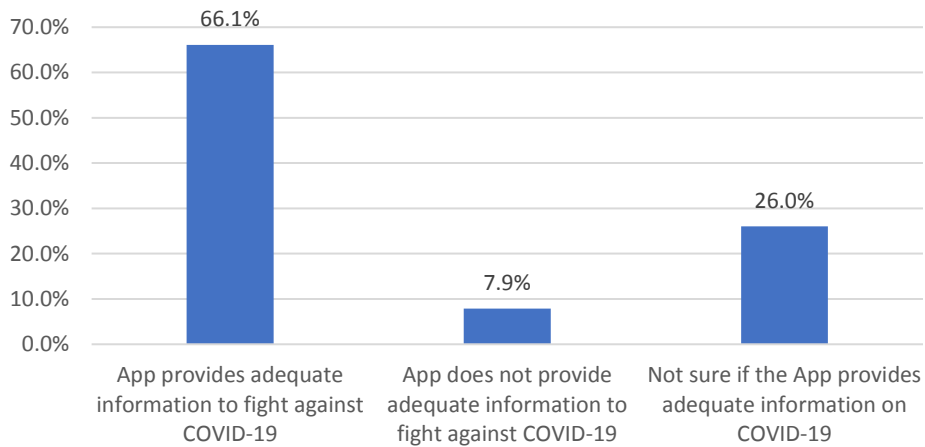
Inference: Among the respondents 8.1% were unaware of the App called Aarogya Setu.

Figure 2:
Have you installed the 'Aarogya setu' mobile application?
385 responses



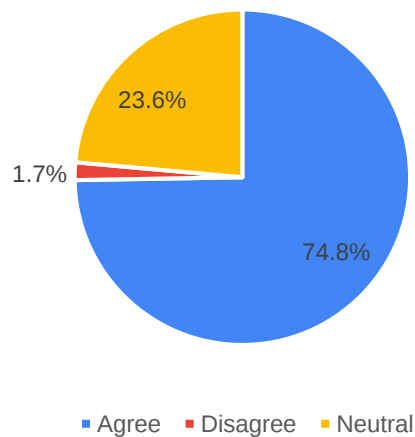
Inference: 62.9% of the respondents have installed the Aarogya Setu mobile application where as 37.1% did not install the Application.

Figure 3: Does the App provide adequate information on COVID-19



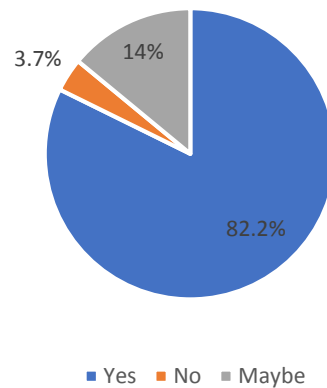
Inference: About 66% of the respondents are of the opinion that the App adequate information to fight against COVID-19 where as 7.9% respondents opine otherwise and 26% of them are not sure.

Figure 4: The App has a userfriendly interface



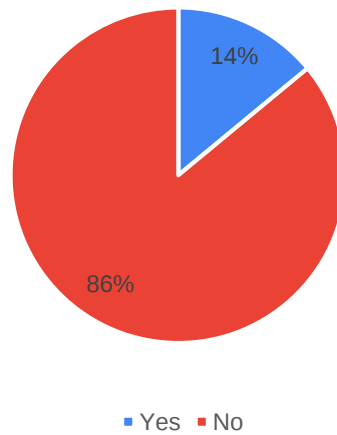
Inference: Among those who have downloaded the App, majority of them i.e. 74.8% feel that the App has a user-friendly interface whereas very small percentage of respondents i.e. 1.7% feel otherwise. About 23.6% of them are neutral.

Figure 5: Respondents would recommend Aarogya Setu app to friends and family members



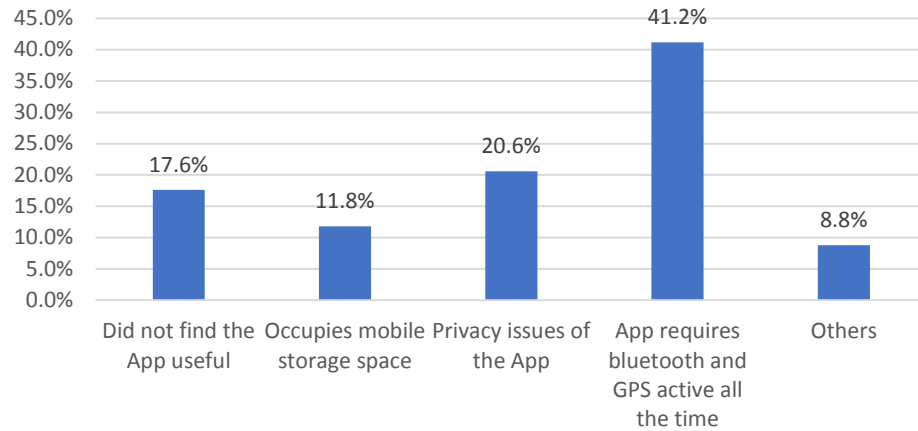
Inference: 82.2% of the respondents agreed that they would recommend the App to their friends and family member but 3.7% responded that they would not recommend this App whereas 14% respondents replied they were not sure about it.

Figure 6: Respondents Uninstalled the App after using it



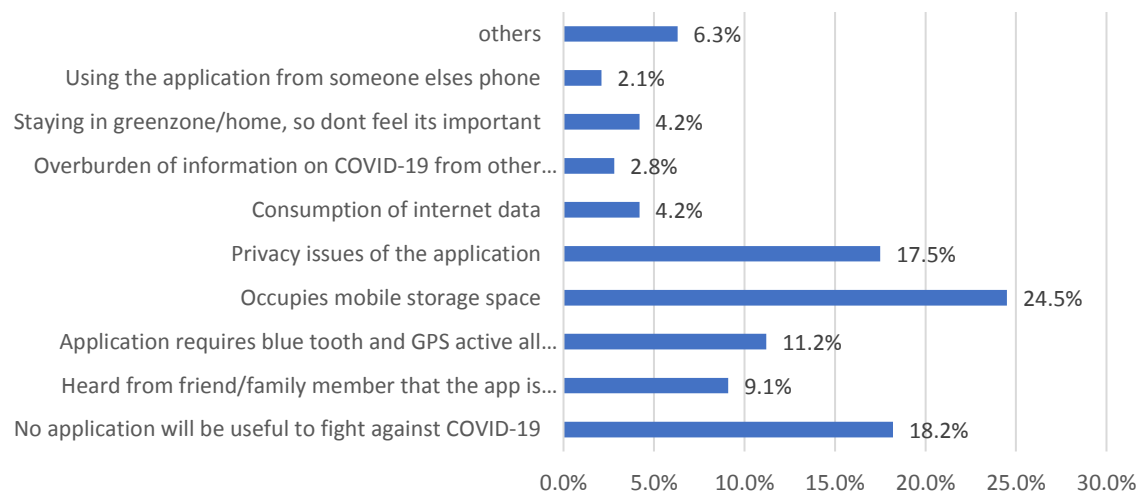
Inference: A very minimal percentage of the respondents i.e.14% have uninstalled the App after using it.

Figure 7: Reason for Uninstalling the App after using it



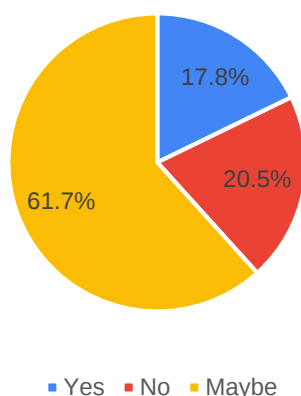
Inference: The major reason for uninstalling the App after using it is that, the App requires Bluetooth and GPS active all the time to be effective.

Figure 8: Reason for not installing Aarogya Setu App at all



Inference: For those respondents who have not installed the App, the major reason turns out to be issues relating to mobile storage space, privacy issues of the App as well as the belief that no mobile application will be useful to fight against COVID-19.

Figure 9: Allegation against Aarogya Setu app that it has privacy issues is true?



Inference: majority of the respondents replied that they are not sure if the allegation against the App that it has data privacy issues. But 17.8% of the respondents do feel that there is data privacy issue in the App.

From the study it has been observed that majority of the respondents were aware of the Aarogya Setu App, only 8.1% of the respondents were not aware of the application. A vast majority of the respondents had installed and have used the app to fight against corona virus disease. And 66.1% of the respondents who have downloaded the App feels that the application provides adequate information to fight against the disease, while a small percentage of respondents do not feel the app provides adequate information, a significant 26% of the respondents are not sure about the importance of the information provided by the App. Among those who have downloaded the App 82.2% had agreed that they would recommend this App to their family and friends, which shows a good acceptance of the app among the respondents. Although 14% of the respondents had uninstalled the application after using it. The major reason turns out to be the GPS and Bluetooth facility of the app to be active all the time for the app to be effective. Other reasons for uninstalling the app are data privacy issues of the app and also 17.1% of the respondents feel that the app is not useful.

Among the respondents 37.1% have not installed the Aarogya Setu mobile application and the main reason for not installing the app was found out to be the application storage issue

in the mobile phones. Other major reason that 18.2% of the respondents who did not install the app sighted that they believe that not mobile application will help fight corona virus disease. Also 17.5% opined that they did not download the app due to data privacy issues in the application.

DISCUSSION

The principle findings of this study are that, majority of the people are aware of the Government of India's efforts in fighting corona virus disease and their mobile application based approach in providing information to the general public and for contact tracing. People are willing to abide and follow governments advice to download the Aarogya Setu application, although a marginal percentage of people have uninstalled the application after using it, but vast majority of the respondents have retained the application in their mobile phones and also are willing to propagate about this application and suggest their friends and family members to use this application. This shows that the application has a good acceptance among the public.

But it is to be noted that a significant percentage of people even though are aware of the application of the application, they are not willing to install and use it. The main hindrance in the use of this application turns out to be issue in the mobile storage space. It is to be noted that the Aarogya Setu application consumes storage space of just 3MB, which is very little compared to other entertainment, educational and social networking applications. There are also concerns of data privacy of individuals in this application which caused a considerable number of respondents to not use this application. A similar phenomenon has been observed in a study conducted in countries with stronger privacy and security concerns (Germany and the US) are relatively less supportive of app-based contact tracing. Individuals who have less trust in their national government are also less supportive [2]. Another important finding of the study on people who have not used the application is related to the behavioral aspect of the public. It has been found that a considerable percentage of the respondents have opined that no mobile application will help in fighting against the corona virus disease.

LIMITATIONS OF THE STUDY

The study had some limitations. Primarily the respondents of the survey belonged to young age group. 80% of the respondents belonged to the age group on 20-30 years. Although this is in consistent to the youth population of the country and represent how the young feels about Aarogya Setu application, but the study could not engage much the older population. Another limitation of the study is that, the responses were taken from only English educated respondents as the survey was done via google forms in English language, although the Aarogya Setu application is available in 10 Indian languages along with English.

CONCLUSION

In conclusion, the study shows strong public support for mobile application-based contact tracing and information provider to fight against COVID-19. This is an important result since public support is a necessary condition for the viability of the approach. The support base can be increased by the government by assuring data privacy of individuals and also educating the general public that technology-based approach would help the public to be safe from the virus which in turn would save the country.

REFERENCES

1. Luca Ferretti et al. "Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing". en. In: Science, 2020 March. issn: 0036-8075, 1095-9203. doi: 10.1126/science.abb6936.
2. Samuel Altmann et al., "Acceptability of app-based contact tracing for COVID-19: Cross-country survey evidence", medrxiv. 2020 March
3. Johannes Abeler et al. "COVID-19 Contact Tracing and Data Protection Can Go Together". en. In: JMIR mHealth uHealth, April 2020, e19359. doi: 10.2196/19359.
4. Aaqib Bashir Dar et al., "Applicability of Mobile Contact Tracing in Fighting Pandemic (COVID-19): Issues, Challenges and Solutions", Researchgate, 2020 April.
5. https://en.wikipedia.org/wiki/Aarogya_Setu
6. www.qualtrics.com/experience-management/research/determine-sample-size/