Challenges/Issues Faced By The Competitors

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1. Introduction

1.1 Background

Healthcare applications provide online doctor consultation services.These applications help individuals monitor their own health, keep track of medications and are effective during emergency situtaions.They provide easy communication with the professionals especially in the present times when people cannot go out for little things due to COVID-19.

Various healthcare apps include: a) Zocdoc b) Practo c) Lybrate d) DocsApp e) Doctor On Demand f) Amwell(Americanwell) g) Lemonaid Healthcare app h) GoodRx Care(Heydoctor) i) MDLIVE

1.2 Problem

There are many healthcare applications but still users are unsatisfied with their service and also apps are failing to provide good service.

Objective : To find the reasons for the failure of healthcare apps and challenges/issues faced by them through the negative reviews given by the users.

Business question : What are the challenges /issues faced by the competitors(healthcare apps)?

2. Data Acquisition and Preparation

Data of various healthcare apps under study (Zocdoc, Practo, Lybrate, DocsApp, Doctor On Demand, Amwell(Americanwell), Lemonaid Healthcare app, GoodRx Care(Heydoctor), MDLIVE) is scraped from Google Play Store and App Store and dataframes are created.

```
: zocdoc_result

: [{'reviewId': 'gp:AOqpTOFdviUo3QXy7ssCKpZkWP4mSTajd1dobU2a3iZGF5MXiyGc6tCS2f1872KdlZC6ecAuk0oqSb7x_saHeQ',
   'userName': 'Tad Yoder',
   'userImage': 'https://play-lh.googleusercontent.com/a/AATXAJxil0_ArcNCJtP252Fjh6tsC1JzKidFLTy0HDqs=mo',
   'content': '0l',
   'score': 1,
   'thumbsUpCount': 0,
   'reviewCreatedVersion': '3.74.0',
   'at': datetime.datetime(2021, 6, 24, 20, 28, 56),
   'replyContent': None,
   'repliedAt': None},
  {'reviewId': 'gp:AOqpTOHuG9PrXMDEhWhJlG3nBmoNjH4jVgNS1P_np_Nat56UrduDNub0ZdCP6M2kofz_7BX18enj12tolTN1-g',
   'userName': 'Bruno Vega',
   'userImage': 'https://play-lh.googleusercontent.com/a-/AOh14GiVjc-wNVS58yxR7jiPUU-MS2zEFEQnXh01MtOahg',
   'content': 'Very responsive and easy to use. It simplifies the process of booking an appointment with doctors of
any kind, and helps a great deal to get in touch with any health professionals for any particular need.',
   'score': 5,
   'thumbsUpCount': 0,
   'reviewCreatedVersion': '3.73.0',
   'at': datetime.datetime(2021, 6, 24, 6, 46, 38),
```

```
zocdoc_df.head(3)
```

	reviewId	userName	userImage	content	score	thumbsUpCount	reviewCreatedVersion	
0	gp:AOqpTOGbCatlbA3bnu52ITz0Q2ssHE98j2uaplAd4XE...	Daniel Feliciano	https://play-lh.googleusercontent.com /a-/AOh14...	Easiest way to find and book a doctor. As a ba...	5	0	3.74.0	2021-(08:4
1	gp:AOqpTOFdviUo3QXy7ssCKpZkWP4mSTajd1dobU2a3iZ...	Tad Yoder	https://play-lh.googleusercontent.com /a/AATXAJ...	0l	1	0	3.74.0	2021-(20:2
2	gp:AOqpTOHuG9PrXMDEhWhJlG3nBmoNjH4jVgNS1P_np_N...	Bruno Vega	https://play-lh.googleusercontent.com /a-/AOh14...	Very responsive and easy to use. It simplifies...	5	0	3.73.0	2021-(06:4

Data is sorted based on 'score' column.

```
zocdoc_df.head(3)
```

	reviewId	userName	userImage	content	score	thumbsUpCount	reviewCreatedVersion	
0	gp:AOqpTOGbCatlbA3bnu52ITz0Q2ssHE98j2uaplAd4XE...	Daniel Feliciano	https://play-lh.googleusercontent.com/a-/AOh14...	Easiest way to find and book a doctor. As a ba...	5	0	3.74.0	20
2112	gp:AOqpTOGL1XD8r2UhBrX9QTvmtQgmlkt-KLzeA0-6k9C...	Unhealthy vet to fit and healthy vet	https://play-lh.googleusercontent.com/a-/AOh14...	This app is great. When ever i need a doctor i...	5	0	2.4.2	20
2115	gp:AOqpTOEBdSHBMVRvmU3PWfpUxd8Nv8g7pR7mnZ_cRvd...	Cherry Blossoms	https://play-lh.googleusercontent.com/a-/AOh14...	Awesome easy to get a dr you need and fast	5	0	None	20

Negative reviews are extracted and unrequired columns are dropped.

```
zocdoc_negative_reviews.head(5)
```

	content
2016	This is a great app for finding a doctor in yo...
2055	It looks like a three year old was contracted ...
179	Haven't had to the doc appointment yet. But it...
2265	Great concept, but hamstrung by a fatal flaw; ...
2266	Searched for a dermatologist (as in a "specia...

All the unrequired characters are removed.

```
import re
zocdoc_negative_reviews = [re.sub("[^\w ]", " " , x.lower()) for x in zocdoc_negative_reviews['content']]
zocdoc_negative_reviews = ' '.join(zocdoc_negative_reviews)
print(zocdoc_negative_reviews)
```

```
this is a great app for finding a doctor in your comercial insurance  network without having to spend hours calling
your insurance to find a doctor  however if you have medicaid medicare the app states that the doctors will accept
your insurance but then they cancel it   call you stating that they don t accept it  this was the  1 reason i used
the application because calling the medicaid insurance is the same thing you call to make an appointment but then t
hey say they don t accept it  grrr frustrating   it looks like a three year old was contracted for the new visual i
dentity  haven t had to the doc appointment yet  but it doesn t give me the numbers for the docs just the address
this is really inconvenient for me  i had to look up the entire location on my own they just give the insurance cov
erage and adress great concept  but hamstrung by a fatal flaw  no way to see phones for the clinics or officers pri
or to making the appointment  lot of back and forth to make an appointment  call to verify insurance  then cancel t
he appointment  repeat  their insurance filters don t match my insurance  contact numbers  should be shown front an
d center  searched for a dermatologist  as in a   specialist   but at least 50 60  of the results are general prac
titioners  i realize that this is probably due to doctors self reporting themselves as dermatologists  when they a
are actually general practitioners  but it makes the search not very useful   zoc doc itself as a service is decent
for things like scheduling  if you already know the doctor or do not need any kind of specialist  it is quicker to
use google to find nearby specialists  not sure if it s just my area but i entered in six or seven specialties and
the only one that came back with a result was dental cleaning   nice app  maybe but it proved zero results  as far
as i m concerned  i wish i could type in my insurance instead of having to scroll through the menu like i can on th
e website  difficult and unfruitful  great idea  app needs more work i love how simple this app makes it to find a
great doctor  even if you need a same day appt  i really don t like the interface though  it s really annoying when
```

3. Summarization Modeling

3.1 Summarization pipeline object is created(Abstractive Summarization using BART transformer)

```python
from transformers import pipeline
```

```python
summarization = pipeline("summarization")
```

3.2 Finding Challenges/Issues faced by competitors from summarized text

Text is summarized in chunks and from them points points are found.This is done for all the applications.

Zocdoc
1) Improper information is provided to patients about insurance acceptance
2) Doctor's availability status is incorrectly shown
3) Patients are not notified about the cancellation of appointments
4) Hospitals are not properly notified about the appointments and patient's information
5) Doctors are not found in certain locations
6) Easy search(search by doctor name) option is not available
7) Patient's appointment status(if cancelled) is not notified to the hospitals and also not updated in the app

Practo
1) No easy search options for users
2) Video call feature is faulty
3) Important details are not mentioned(doctor's qualifications,salts in medicines)
4) Locations list is very short.More locations can be added
5) Doctor's list is not as per the given location
6) Appointment details are inconsistently reflected at the doctor's end
7) Availability of medicines in the partnered store is not notified prior the order is placed
8) Follow up duration is less
9) No confirmations in the app regarding appointments

Lybrate
1) Registration process is lagging and improper
2) Features are not flexible(uploaded files couldnot be dropped)

3) Payment options are less which is disappointing users
4) Lybrate coupons couldnot be applied
5) Location search is endless thereby draining battery of user's mobiles
6) App works very slow
7) 'read more' option doesnot work

DocsApp

1) Users are not happy with list of doctors
2) Customer support service is not good
3) Lab & pharmacy services are unsatisfactory to the users
4) No email confirmations/notifications regarding user's actions
5) Medicine delivery service is poor
6) Methods of diagnosis is to be improved

Doctor On Demand
1) Customer support service is poor
2) Users are unhappy with the strict timebounds,they feel unethical if they are cut off from the call
3) Frequent timeouts(users have to restart session)
4) App doesnot support headphones
5) Mental health professionals are few
6) Audio isn't clear & needs an improvement

MDLIVE
1) Video & audio quality are very poor
2) App doesnot support any headphones
3) Frequent timeouts(users have to restart session)
4) Symptom checker doesnot work
5) Appointments are cancelled without user interference
6) Pricing page changes amounts all the time
7) Online waiting room feature is to be added

Amwell(Americanwell)
1) Full screen popups on user mobiles even after uninstalling
2) Billing methods are inappropriate
3) App crashes frequently
4) App doesnot work on Android but is good on IOS
5) Registration page is faulty
6) Password is not incorrectly stored in the database and user has to reset password everytime

Lemonaid Health app
1) Installing app disturbs mobile's working
2) No email confirmations/notifications regarding user's actions
3) App crashes frequently
4) Customer support service is poor
5) Frequent timeouts

GoodRx Care(heydoctor)
1) Database is not well maintained
2) No notifications regarding consultations
3) Customer support service is very poor
4) App doesn't work if reinstalled
5) App crashes frequently

4. Conclusions

In this study, I used google play scraper, app store scraper to get the required data of all the applications and summarization pipeline to summarize text. From the summarized text, required points are extracted.

5. Future directions

I would like to extract summary in a more effective way using LSTMs and for the whole text.