Final Deliverable Document

“Design Approach/Decision-Making Evidence”

For

Online Account Opening (OAO)

November 27th, 2018

GA UXDI 45 UX-DESIGN TEAM

Christopher Zarback
Hana Park
Maryna Cherkashyna

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1. Product Selection first before OAO

Regarding the Target User's needs/ pain points/ and goal, Product Selection is coming first (Please check the details in "Rationale" in the Flow PDF).

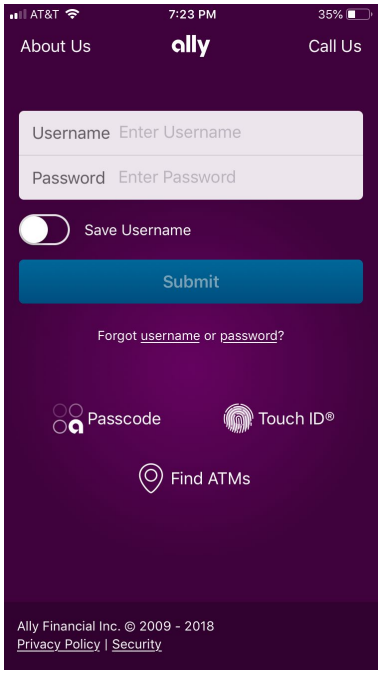
Based on competitive & competitive analysis on both US based & China-based fintech apps, "Product Selection first before OAO" can be a way to provide the target users' needs and attract them to OAO better.

- **Different/ special experience from other possible competitors**

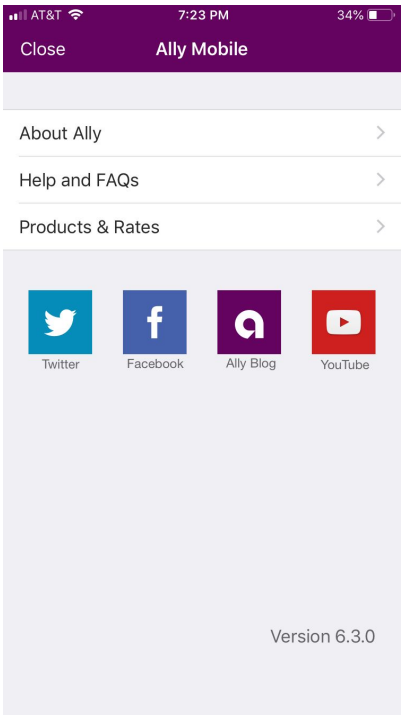
    - ALLY app
        - not intuitive (cf. website)

      : Users can learn about the product and select the product first before profile sign-up or OAO. But the first screen is fully filled with profile sign-up and hard to check about the product. Also, users need to click multiple steps more to find the OAO CTA.
        - Users need to make a phone call to the US for OAO

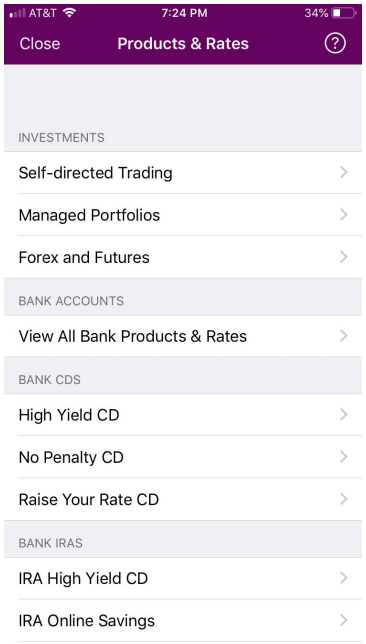
        1) You need to click small letters "About US" on the left top

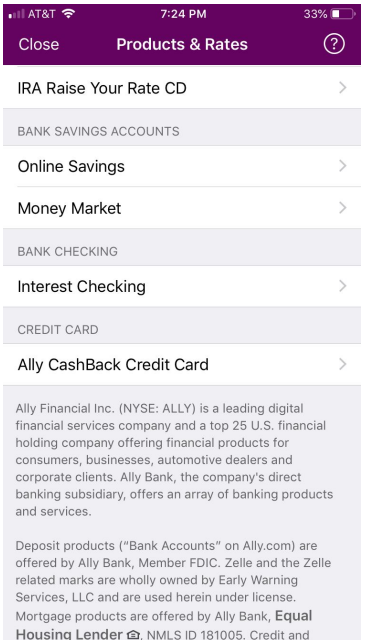


2) Click “Products & Rates”

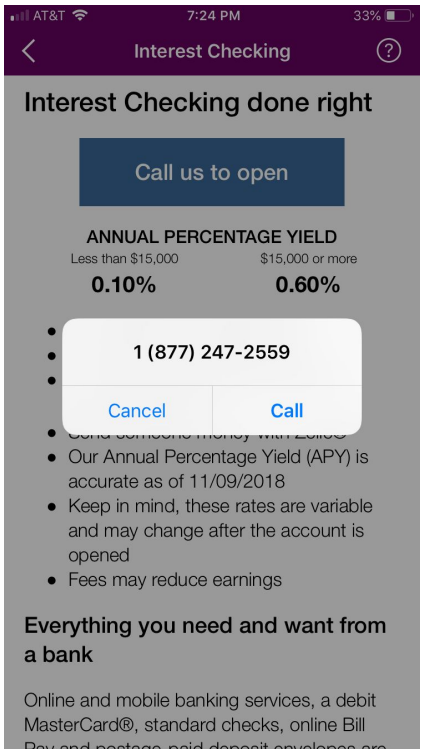


3) There is “view All Bank Products & Rates” under BANK ACCOUNTS But if you click, there’s no OAO CTA. Users actually need to scroll down to find “interest Checking”. Naming Interest checking can be also confusing.

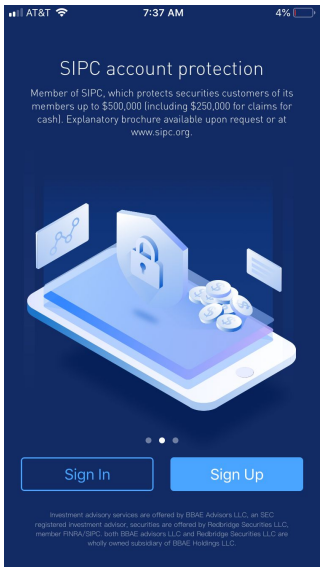


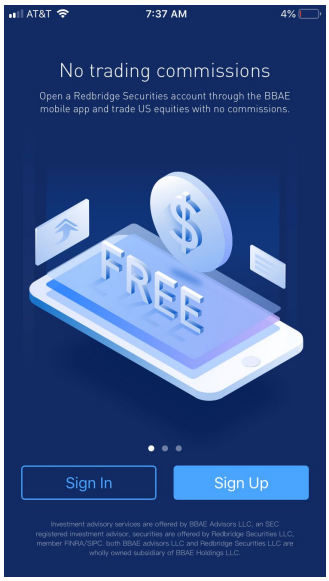


4) US phone number pop-up after CTA click

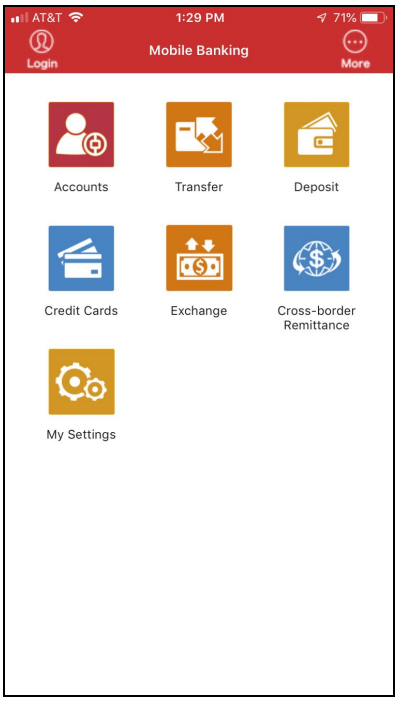


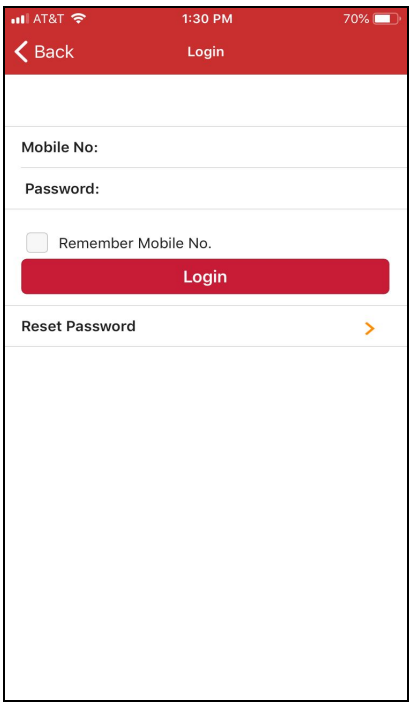
- BBAE
  - Need to sign-up first to learn the details
  - There are just three general product marketing sliding pages before sign-up



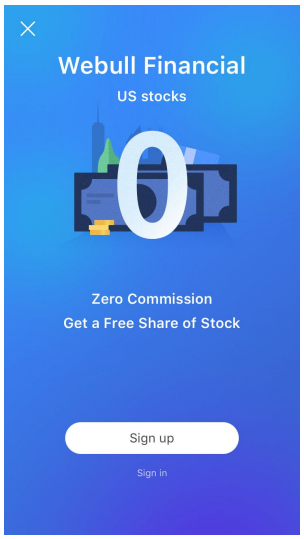


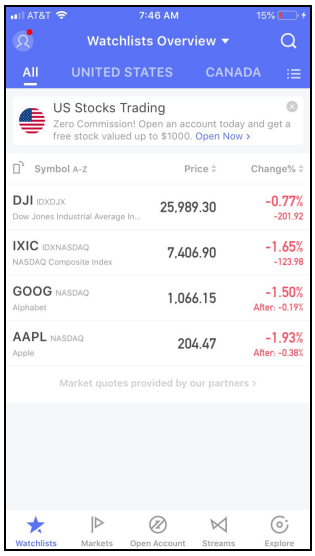
- BOC (Bank of China-English version)
    - Menu buttons on the first screen
    - But need to sign-up first to learn the details of each menu
    - Even though users click each menu, it always brings to the same signup page.

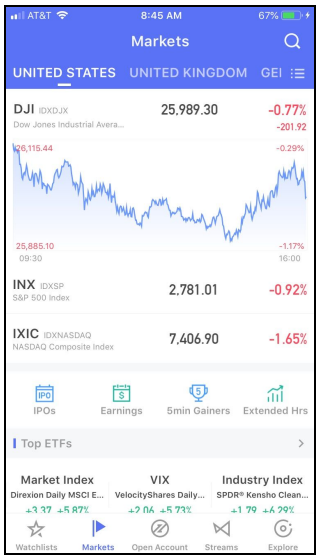


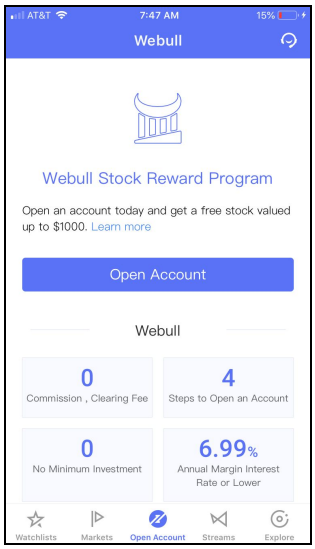


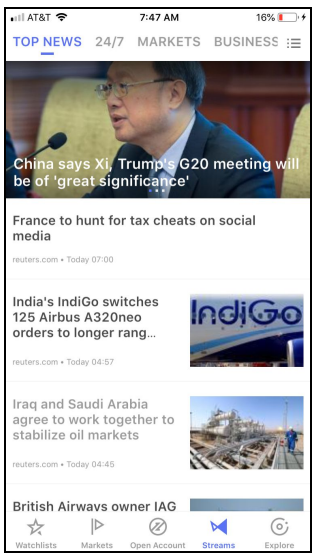
- Inspiration as comparative analysis
    - Webull
        - The very first page looks like a marketing page with only signup CTA choice, but actually, the user can click x, close the screen and explore the whole service.
        - Needs to be more intuitive about the things mentioned above but the idea that user can enjoy all the useful information/ service even without signup would be appealing to the target users.
        - OAO CTA (Call To Action) is very intuitive and locateed in the middle out of all the service, provides the feeling it is important.

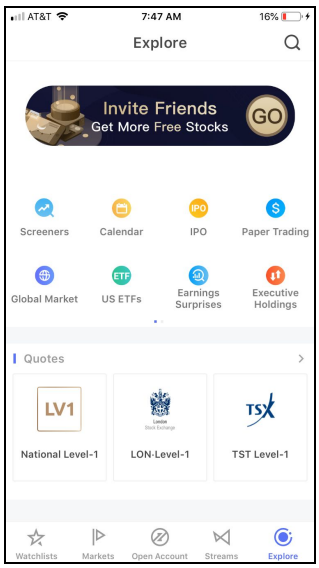




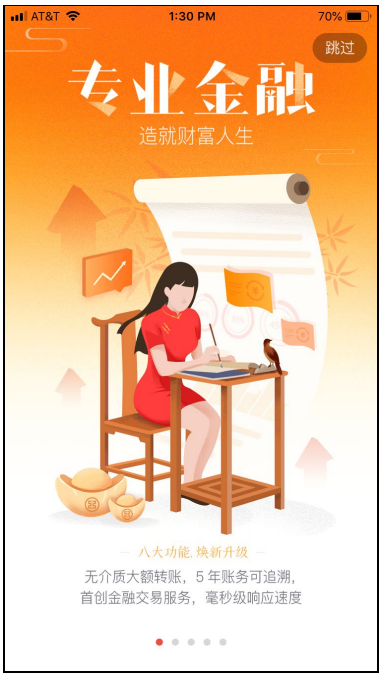








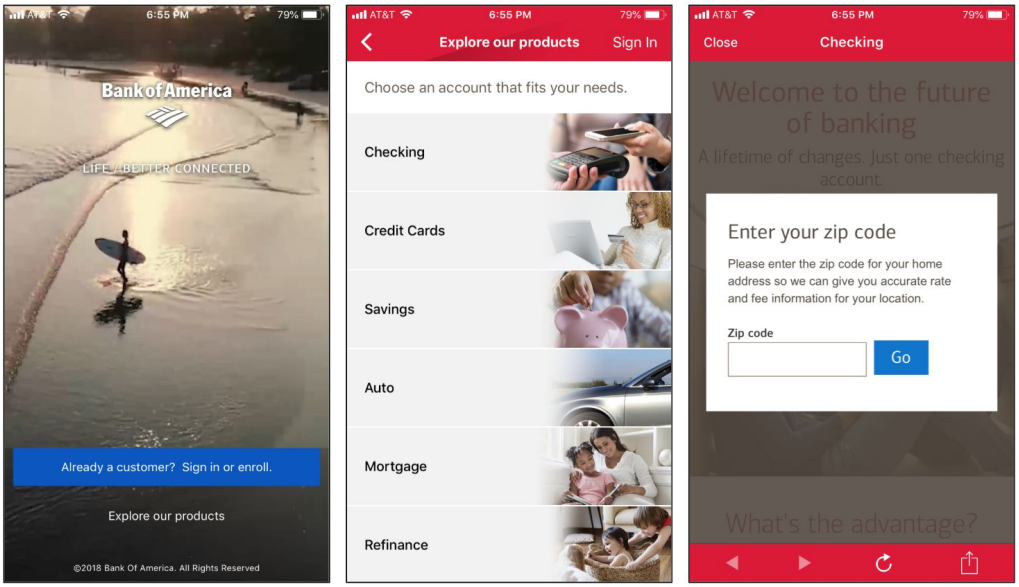
- ICBC (Industrial and Commercial Bank of China)
  - Staring with marketing/education page and e-security agreement, but no signup needed to explore all the menus and services.
  - The education on some menus was provided



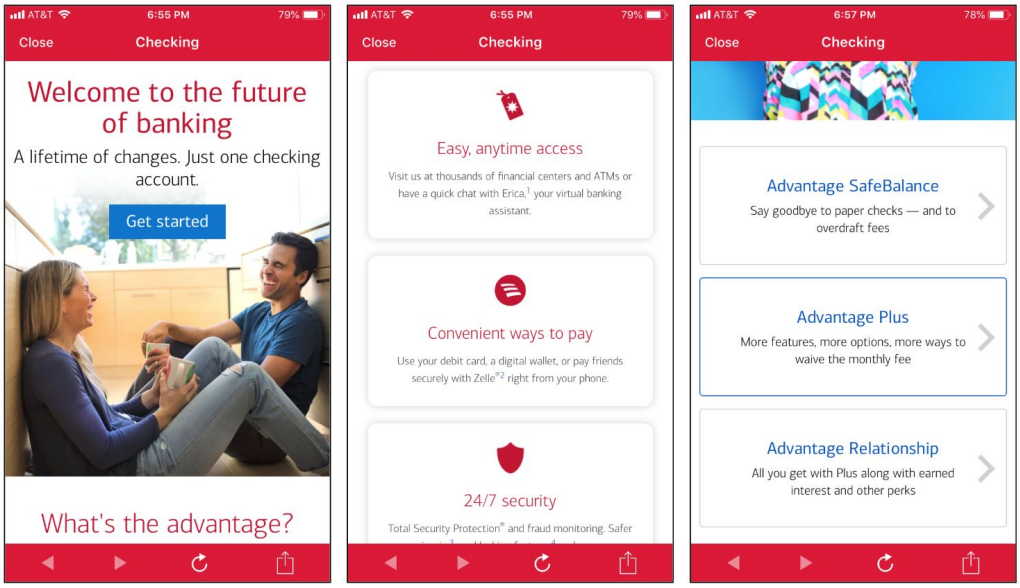
- Bank of America (App)

Bank of America would be one of the competitors since it allows users to open some accounts without SSN (Social Security Number). But it has a good comparative part to get inspirations and idea for our clients OAO as well.

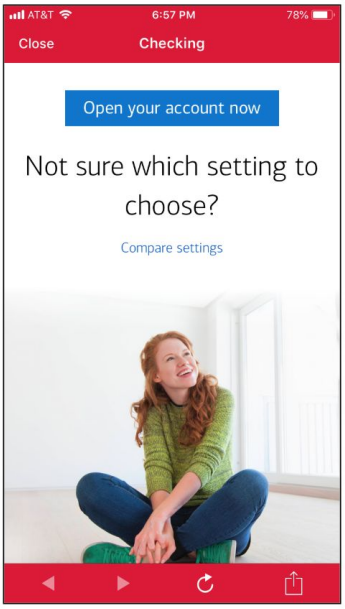
- There's clear option to explore the products before signup
- Account selection is very direct.
- Users, however, need to enter US zip-code to go further step.
  (but need to double check how it shows when user use from China)

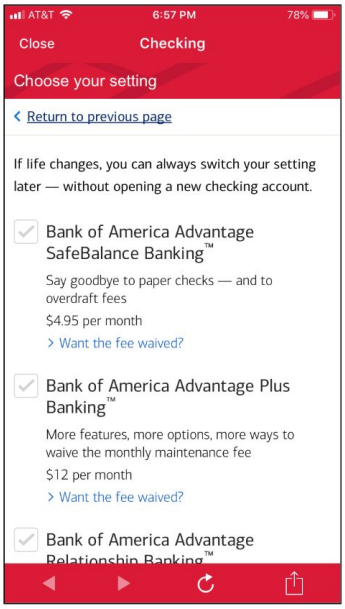


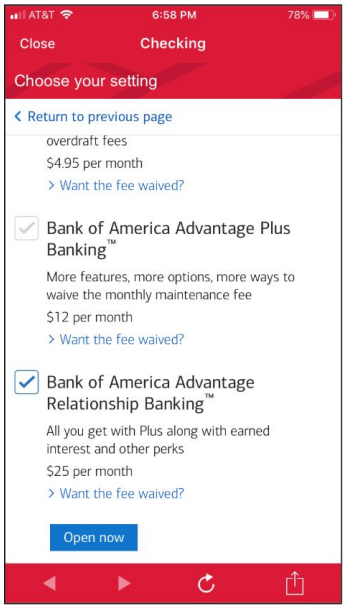
- Once, users are in, there is education up to CTA button.



- After CTA, there are more detailed options and actual CTA but you cannot select several options at once (only one selection is allowed)







2. Technology options

According to Lauren Golden, “Best form is no form” can refer to an innovative good form design to provide the users seamless experience by reducing the work user has to do; by minimizing the errors; by error prevention.

- Please check the experience at www.thezebra.com

Following these manners, for our clients OAO experience, four different specific technologies can be introduced. First, OCR (Parsing) and Voice Typing (Voice input) are suggested as a current suggestion, regarding the time and feasibility of our client's mobile app development schedule. Then next, QR code (Quick Response) and Voice Recognition AI (Voice UI) technologies will be discussed in detail as a future suggestion.

2-1. Current suggestion

2-1-1. OCR (Optical Character Recognition)

In our clients, current desktop version OAO, applicants are already uploading a picture of ID card & Passport as the requirement of open US bank account and get KYC checked only for the ID validation. In mobile abb version, by integrating OCR technology, personal information available on the ID/Passport can be extracted in two different ways as below:

- Image Parsing with video streaming capture mode scanning:
  (letters on the ID/Passport)

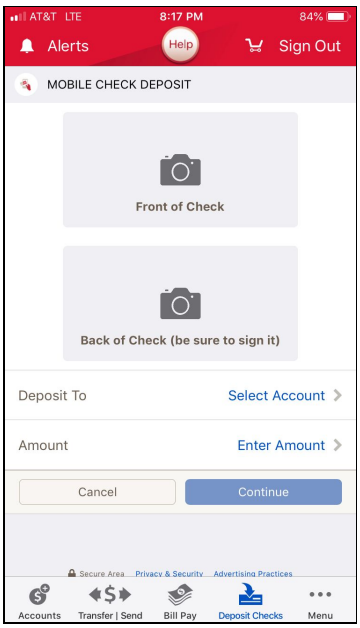
- Scan the code/barcode:
  (data from the database)

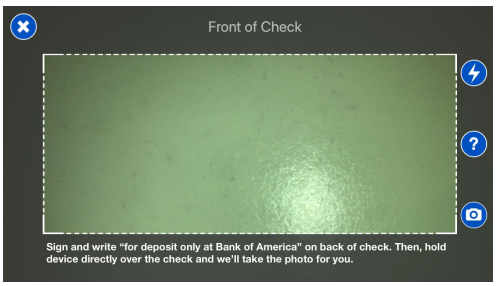
The current Chinese National ID card is the second-generation version that features an embedded chip and digital encryption. The card contains personal information including the individual’s full name in Chinese characters, gender, ethnicity, date of birth, domicile, identification number, and a color photo. With OCR, the majority part of personal information can be pre-filled and reduces the work the user has to do. Also, it minimizes and prevents the errors which can occur by the manual input method.

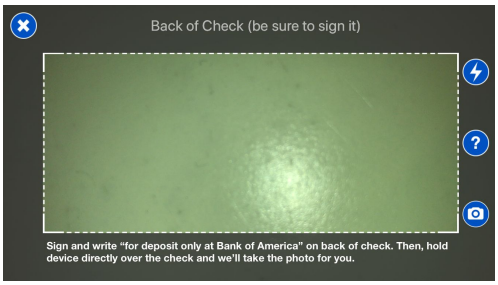
- **OCR for check deposits**

OCR is a fairly new technology but is already widely used in the world for the last couple of years. In US-based mobile apps, it is used in bank apps for check deposits and in digital wallets for credit card uploads. Below are the examples:

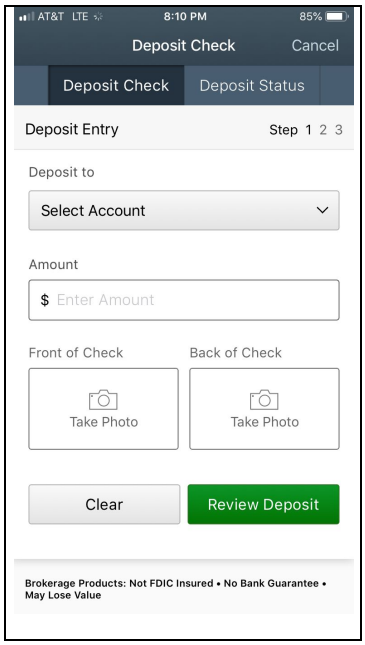
- Bank of America's check deposit OCR

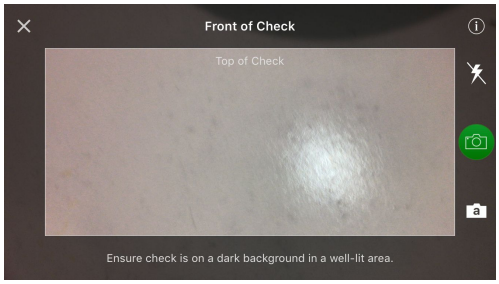


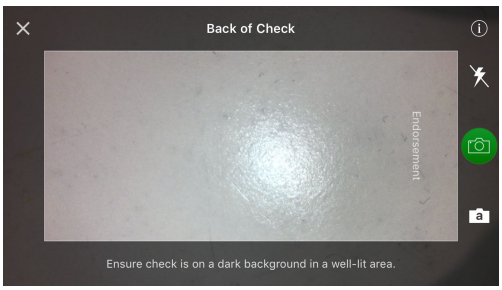




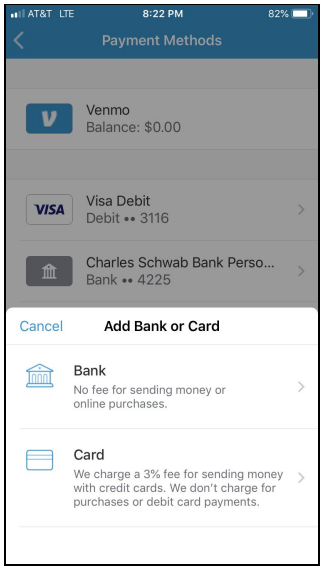
- Charles Schwab's check deposit OCR

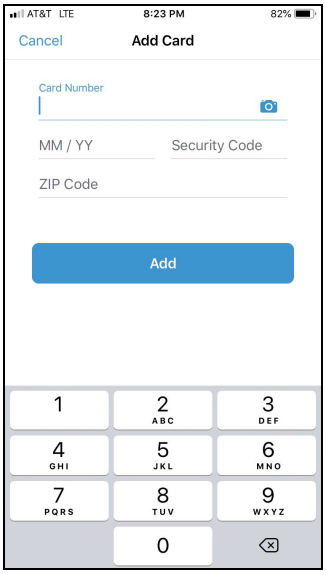


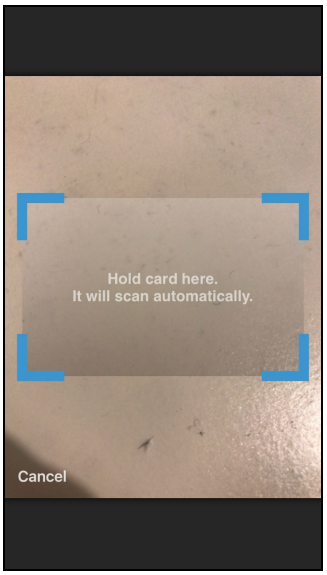




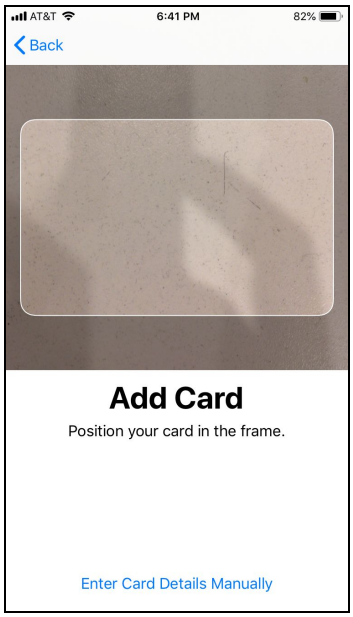
- **OCR for credit card upload**
    - Venmo credit card upload OCR







    - Apple pay/wallet credit card upload OCR



- **OCR for ID/Passport Scan**

Below are the technology based in the US, Europe, and international, for ID/Passport OCR.

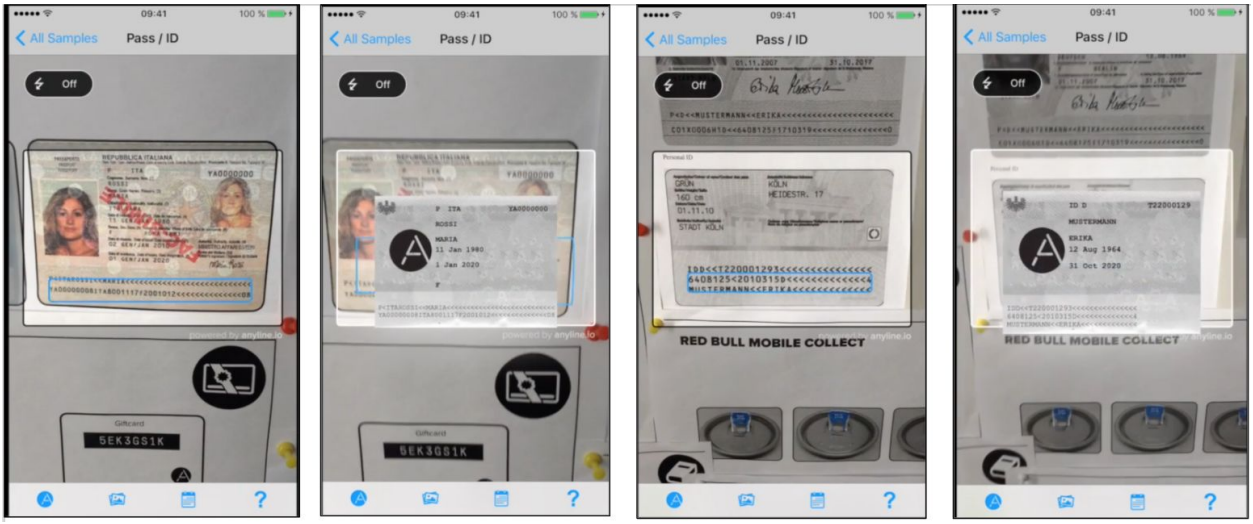
  - Anyline

One of the biggest [benefits of mobile passport scanning]() is the ability to extract data points from the scans you perform. Anyline lets you extract up to 14 different data points including:

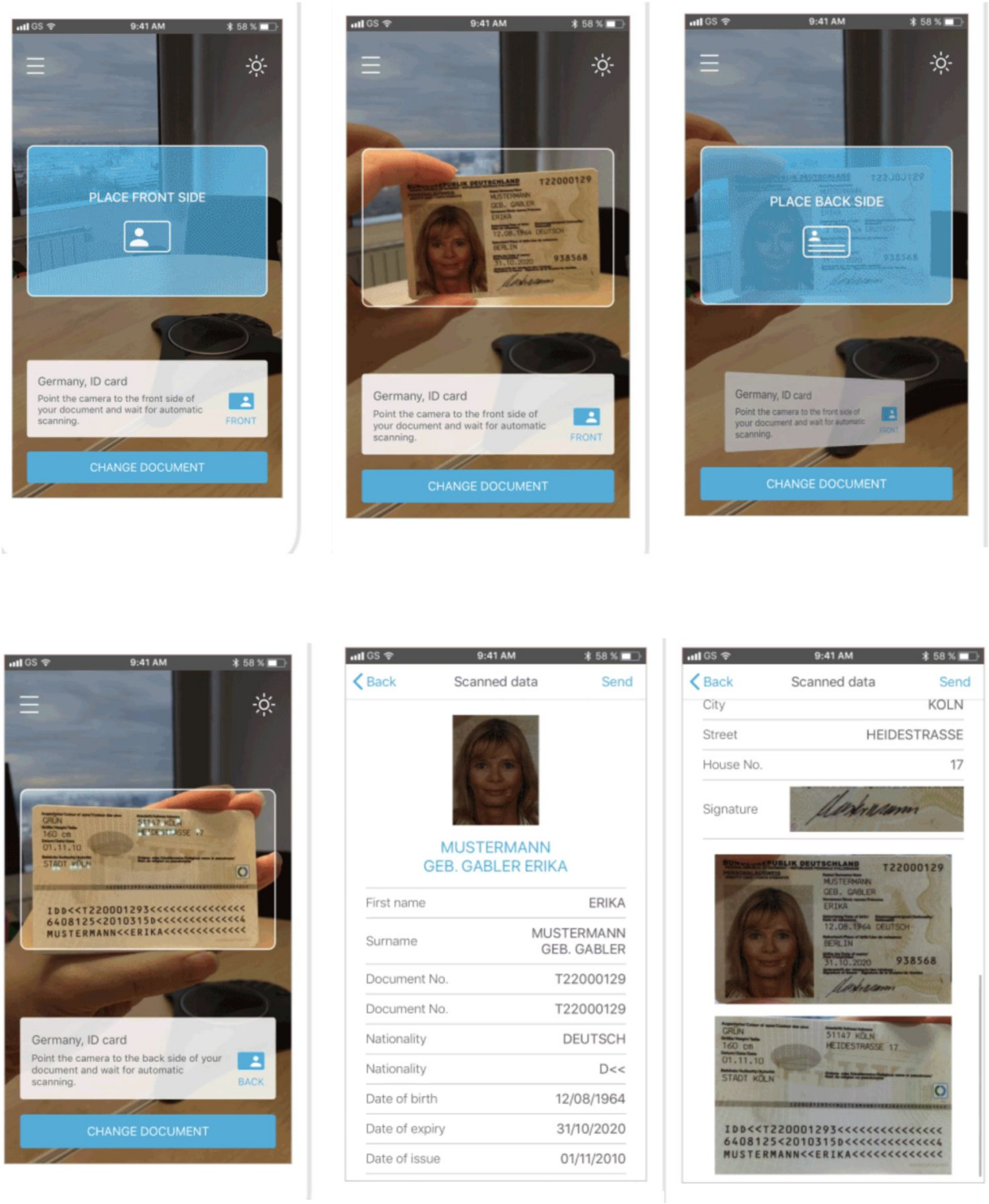
    - All Given First Names
    - Check Digit for all Dates
    - Type of Document
    - Check Digit for Document Number
    - Person's Gender
    - Final Check Digit for all Stored Information
    - Expiration Date of the Document
    - Date of Birth
    - Check Digit for the Date of Birth
    - Check Digit for the Expiration Date
    - Surname

This information can help with a number of different processes but most businesses want to take advantage of this data to improve their onboarding processes.

https://anyline.com/news/mobile-passport-scanning/



- BlinkID

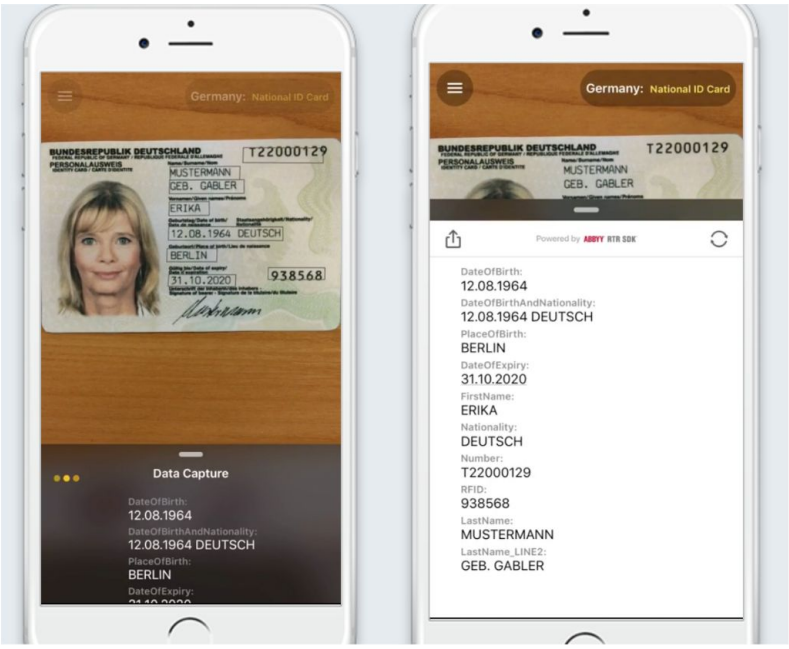


https://play.google.com/store/apps/details?id=com.microblink.blinkidapp&hl=en_US
https://microblink.com/products/blinkid

- Accura scan

https://medium.com/@idscannerapp/top-id-card-scanner-app-and-mobile-ocr-sdk-for-your-business-e507fbf5343

- ABBYY



https://rtrsdk.com/use-cases/id-passport-ocr/

- Apps:
    - FineScanner Pro (by Abbyy)
    - Microsoft OfficeLens (when used with OneDrive and Word)
    - Scanbot Pro
    - Scanner for Me + OCR
    - Scanner Pro

https://zapier.com/blog/best-mobile-scanning-ocr-apps/
https://mashtips.com/ocr-scanner-ios-apps/

In China, there are several companies working on OCR technology, and below are the ones focused on ID card OCR:

- Alibaba Cloud Optical Recognition (OCR)

Alibaba Cloud Optical Character Recognition (OCR) system integrates advanced AI engines to provide accurate text recognition and faster data analysis. Alibaba Cloud OCR can identify a variety of IDs such as driver's license, government-issued identity cards, bank cards, business licenses, etc. The system scores better than their human counterparts in collecting information from these cards. It can easily identify driving licenses and collects information such as the license holder's name, ID number, vehicle type and license validity period. Its business license identification service extracts such information as registration number, company name, address and so on.
https://www.alibabacloud.com/blog/beating-counterfeits-with-alibaba-cloud-optical-character-recognition-%28ocr%29_593769

- Beijing Wintone Science & Technology (OCR)

Beijing Wintone Science & Technology's Mobile ID Scanner workflow is as follows:

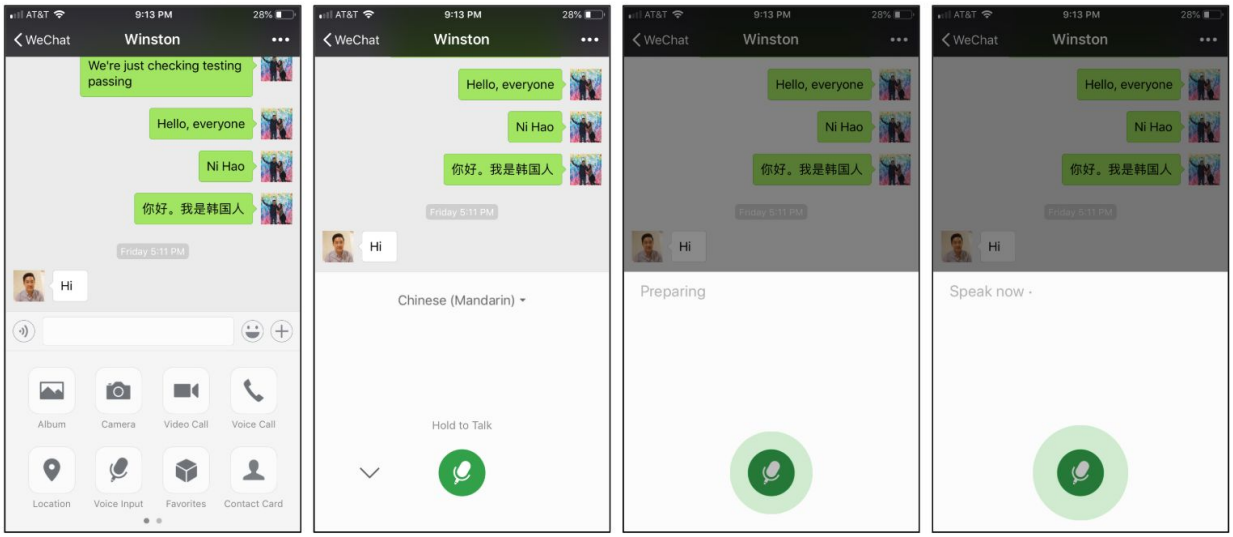
- 1) Image capturing: using the front camera of a mobile phone to capture high-resolution document images, meanwhile, Passport Reader applies Video Streaming Capture Mode to improve the customer experience
- 2) Image pre-processing: this step includes image de-skews, image denoising, image binarization, layout analysis, character segmentation.
- 3) OCR recognition

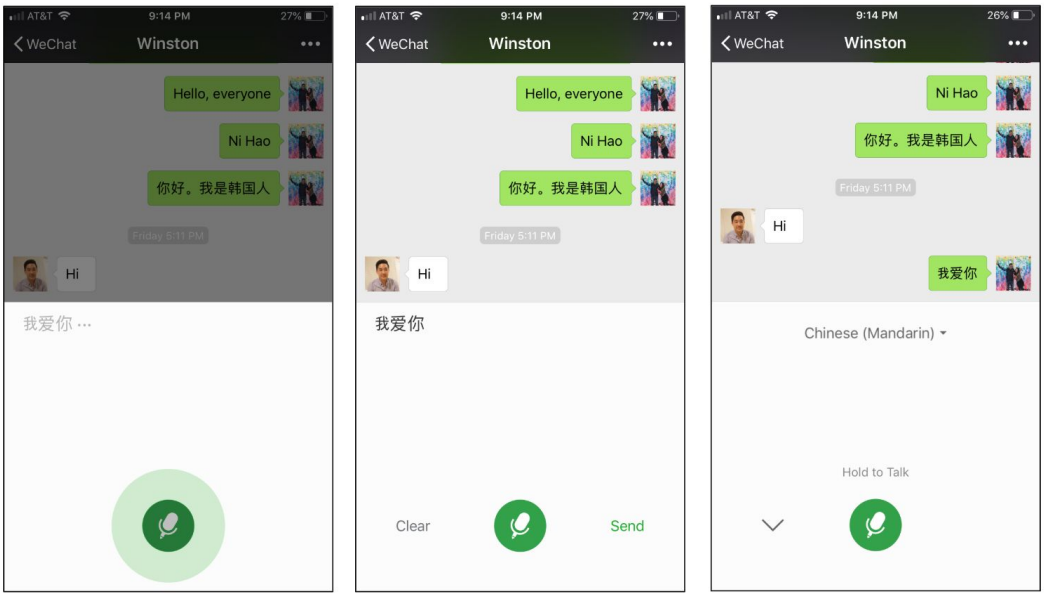
https://www.linkedin.com/pulse/passport-check-id-scan-ocr-tech-jing-su/

2-1-2. Voice Typing (Voice input)

For our clients, OAO experience, Voice Typing (Voice Input/Voice Dictation/ Speech to Text/) is suggested because Voice Messaging/ Typing/ Searching is used as the method of mobile communication in China. From our target users to non-target users, the Voice Recognition feature is in high demand in the Chinese app market. The following are examples of major Voice Typing technology/apps in China.

- **Voice Typing based in China**
    - Wechat (Voice Input)





- iflytek mobile application (iflytek Input & iflyDictation)

iflytek Input features:

iFLYTEK Input is an intelligent input method designed to deliver the ultimate input experience on mobile phones by incorporating perfectly the speech, handwriting, and Pinyin input methods.

- Speech input: Supports mandarin, Cantonese, and English speech inputs as well as personalized input.
- Handwriting input: Enables you to write continuously directly on the keyboard, which greatly improves the handwriting efficiency.
- Keyboard input: Comprises Pinyin, English, and stroke input methods, and supports Thumb Keyboard, QWERTY, and dot-and-dash layout keyboards.
- Diversified skins: Up to 100 skins of the input interface are available to meet even the most demanding requirements.

iflyDictation features:

iFlytek Dictation is a speech input assistant software that can hear and speak words based on cloud computing. It supports speech input, speech-to-text conversion, and text sending by using Email, MicroBlog, WeChat, and QQ.

- A magic speech input tool with a speech recognition rate up to 95%, enabling you to send short messages, microblog, email, WeChat, and QQ messages via speech input and to copy words by pressing the Home key. iFlyDictation is an essential iOS tool for Chinese.
- Supporting speech inputs in Mandarin, Cantonese, and English, and incorporating the speech, Pinyin, handwriting, and stroke input methods.
- Topped the free list and lifestyle list and ranked as a five-star application after being put online for only 3 days, and totally free.
- Launched by iFLYTEK, the No. 1 brand in Chinese speech industry, in an effort to usher in a speech era.
- http://www.iflytek.com/en/mobile/iflyime.html

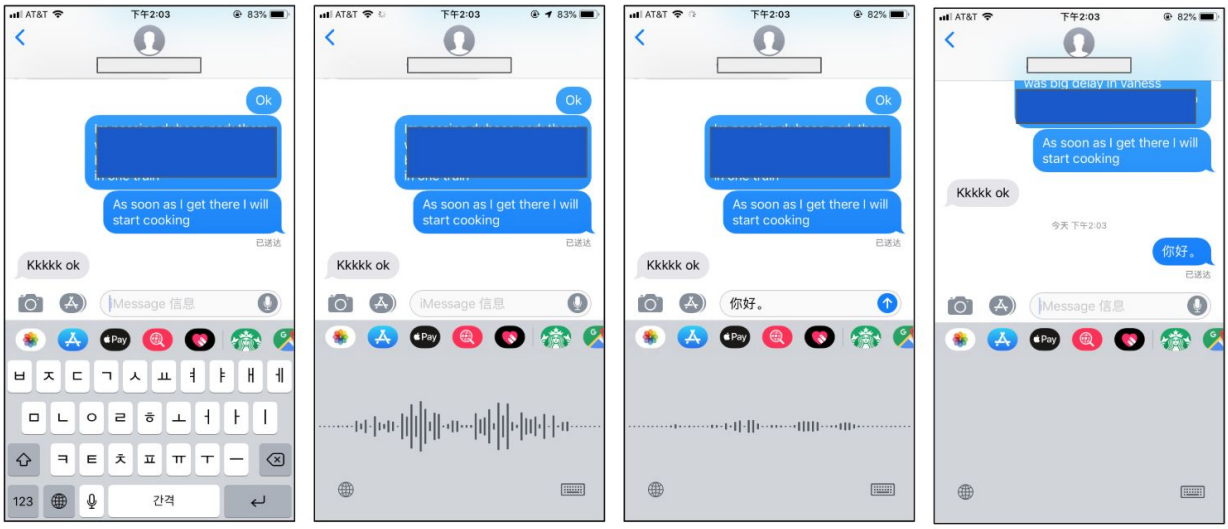
- Alibaba Cloud Voice Recognition (Real-time transcription)

  - Man VS Machine: The Secrets Behind Alibaba Cloud's Speech Recognition Technology
  - https://www.alibabacloud.com/forum/read-183

- **Voice Typing based in the US**

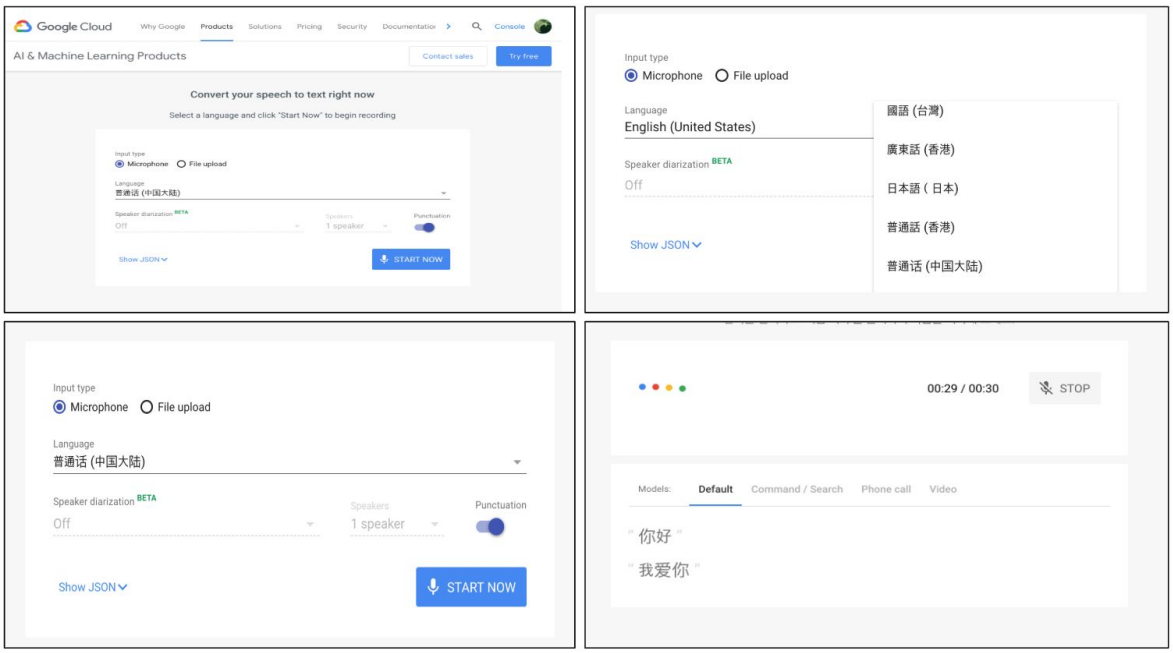
Even Though most of the US-based websites/ app services are blocked in China, US Voice Typing technology/features are used via iPhone/ Android phone, or by using paid VPN.

  - iOS (Voice Dictation)



  - Google Cloud (Speech to Text)

Here in this research, the website version of Google Cloud Speech to Text was tested to check how it works in the Chinese language. https://cloud.google.com/speech-to-text/



In our clients OAO, the target users will be able to say the value instead of typing it in and instantly see it on the screen and confirm whether it got captured correctly If there is an issue they will be able to correct the value by repeating what they said. A backup option to edit the information by manually typing it must be available for the cases when voice-to-text is not ideal. Details on advanced Voice Recognition AI will be introduced in Future Suggestion section.

2-2. Future suggestion

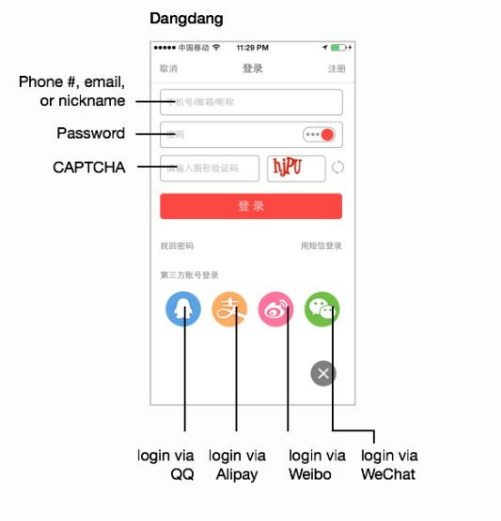
Integrating with the existing or up-to-date technology in China can make our clients OAO experience more efficient by pre-filling the required information: QR code, Digital National-ID, and Voice Recognition AI.

2-2-1. AliPay & Wechat Pay QR code

- **The QR code (Quick Response) 扫码: sǎomǎ**

AliPay & Wechat Pay's QR code payment system changed lifestyle in China. Include our target users, it is already deeply engaged in over 500 million users' daily life from online/offline purchase to all kinds of payment (transportation/ tax/ bills etc.) Not just as a payment method, currently in China, a QR code is also commonly used as a login method like Facebook or Gmail third-party authentication login in the US:

- QR code scan from a desktop screen
  : users scan their own existing QR code (AliPay or Wechat Pay) from their desktop/ laptop screen.
  - Related article: https://www.nngroup.com/articles/mobile-login-china/
    https://www.nngroup.com/articles/wechat-qr-shake/
- QR code integration with AliPay or Wechat App/Wallet
  : users click the button/ term & condition in another app/website onboarding.



- Related article: https://www.nngroup.com/articles/mobile-login-china/
  https://www.nngroup.com/articles/wechat-qr-shake/

For the future our clients OAO, the QR code scan or integration can be adapted to cut the long OAO steps/ clicks/ screens dramatically because to create the AliPay/ Wechat Pay QR code, users already went through:

- National ID verification
- Chinese bank account integration with debit/credit card
- Chinese Mobile phone number verification

(must-have info to create bank account/ QRcode in China)

which are the information overlapped with the required information of our clients OAO. If all of this information can be shared, our clients OAO can be shorten as below:

1. Product Selection
2. Read QR code (scan or integration)
(sign-up/ partial residency status/ID scan/ personal info/ partial background info)
3. Leftover required information
4. Review
5. Term & Condition click for W8
6. Funding instruction

To make this feasible in our clients OAO, more detailed research on QR code scan/ integration is required to check:

- What information/ How much information can be provided to our clients from AliPay and Wechat under current regulation and legal system.
- Legal Validation of provided information in the financial system
- The possibility of the Chinese government's monitoring on a cross-border transaction
  : Alibaba & ICBC (Industrial and Commercial Bank of China) are deeply engaged.
  : Top 5 China Banks are run by the government. (more in section 4.)

- **Chinese E-ID card (Digital National ID)**

Currently, in 2018, both AliPay and Wechat are updating their QR codes not only as payment and login methods but also as Digital National ID card (virtual E-ID). The projects are backed by

the Ministry of Public Security's Research Institute and other bodies such as major Chinese banks such as China Construction Bank.

Once the legal validity for bank use is verified, our clients OAO can also adopt this Digital National ID card technology to remove the need to scan physical ID cards. The US-side, however, legal validity on Digital National ID in bank/financial use should be double-checked.

- With AliPay account, there was a project collaborated with the provincial government of Zhejiang, a pioneer in e-governance nurturing its cluster of thriving tech startups. Currently, people can go to a machine at a local public security bureau, have their face scanned, before answering terms and conditions and very shortly an e-ID card -equivalent to a physical card with the same legal validity- and a unique QR-code will be sent to their AliPay account.

- With Wechat account, there was a project for residents of the Nansha District of Guangzhou, a southern port city of some 13.5 million that serves as the capital of Guangdong province, have been using smartphones and facial recognition technology to link their national ID cards with their WeChat accounts. Currently, WeChat users are able to get two versions of the digital ID card.

  - The color ID card requires the applicant to undergo authentication at government-designated service points and is accepted at government departments via a QR code that is stored in the smartphone app. Scanning the QR code presents verified information such as name and ID number.
  - The black-and-white ID card is instantly issued in WeChat, but this has more limited acceptance as it does not undergo physical verification at government-appointed agencies. This type of ID is aimed at more casual use and won't be accepted as proof of identity in commercial transactions with government departments, such as registering a company.

- Related articles:
  https://www.pymnts.com/mobile/2018/china-digital-id-mobile-payments-wechat-pay-alipay/
  http://www.atimes.com/article/china-launch-e-id-cards-citizens-via-phone-qr-codes/
  https://www.scmp.com/tech/article/2129957/look-chinas-push-national-digital-id-cards

2-2-2. Voice Recognition AI (Voice UI)

- **Voice Recognition AIs in China**

With the tight regulations and complex Chinese natural language processing (130 spoken dialects and 30 written languages), US tech companies face a huge challenge on making speech recognition targeting China market. In the same manner, integrating Voice Recognition Technology in our clients OAO would be challenging as well:

- The possibility of monitoring by the Chinese government
  - Target users are worried about freedom
- Hard to capture Chinese names
  - Even just for one sound in Chinese
    : there are 4 different intonations, sometimes more with dialects
    : many different characters can be written
- There's no AI algorithm built yet for financial use.
  - Bank-required Information filling can be challenging
    ex) infinite options such as occupation
  - Legal validity/ regulations/ constraints can be addressed.
  - Privacy protection is needed for bank related personal/background information
  - cf) AI algorithm built for other industry/sector
    - XiaofeiYu by iFlytek for Didi
    - AliGenie by Alibaba in their e-commerce
    - TingTing by Tencent with WeChat user base
    - iFlytek for Court systems: details below in iFlytek section
    - iFlytek for education- test scoring

- **iFlytek:**

Currently, in China, iFlytek is dominating voice recognition market (70% in 2017/ over 500 million user). In 2015, iFlytek launched the human-machine interaction interface AIUI, hitting a milestone in the AI industry. AIUI redefined the standards for human-machine interaction in the connected era. Over the past six years, iFlytek's voice recognition accuracy has improved from 60.2 percent to over 98 percent. iflytek is now expanding into voice-activated command systems for cars, homes, robots, and schools. Deep learning in a range of fields such as speech recognition, natural language processing, machine translation, and data mining.

Example 1): Didi, a popular Chinese ride-hailing app who acquired Uber China, also uses iFlytek's technology to broadcast orders to drivers.
Xiaofeiyu (Little Flying Fish): a voice assistant for drivers to ensure safe driving, it has no screen and no buttons. Once connected to the Internet and the driver's smartphone, it can place calls, play music, look for directions, and search for restaurants through voice commands. Unlike voice assistants intended for homes, Xiaofeiyu was designed to recognize voices in a noisy environment.

Example 2) Court systems use its voice-recognition technology to transcribe lengthy proceedings. In the justice system, iFlytek is working with China's Supreme People's Court and Supreme People's Procuratorate (public prosecutors). In 2016, a test in Anhui Province showed that an AI system could identify phone scams with a very high level of accuracy. Moreover, a pilot study found that trials were 30 percent shorter when intelligent voice recognition was used instead of a human reporter.

Example 3) In education, AI has outperformed all expectations in scoring test papers. In a test in Jiangsu Province, two different AIs scored a series of college entrance test papers. For Chinese essay questions, the two AIs differed by an average of fewer than seven points per paper. They were 92.82 percent consistent – more than 5 percent higher than the average consistency of two human teachers. A trial in Hunan showed similar scores. iFlytek is currently working with China's National Education Examinations Authority to build an AI lab to jointly develop more advanced technologies for education.

Example 4): business call centers use its voice synthesis technology to generate automated replies.

cf) **Lingxi**: As an intelligent voice assistant jointly launched by China Mobile and iFLYTEK, Lingxi enables you to make a voice call, send messages, query weather conditions, airline information, call charges and traffic, buy lotteries, and subscribe for ringback tones. It can even tell you a joke or chat with you, like a considerate voice secretary. If you would like to reduce your workload, Lingxi can help you make a phone call, send a message, set an alarm, and do other things as a secretary. If you are on the way, Lingxi can be your guide and help you query the weather condition, travel routes, and restaurants.mIf you would like to have some recreational activities, Lingxi can be your compare and help you play music, subscribe for ringback tones, and download applications. If you are idle, Lingxi can be your friend and chat with you, tell a joke, or read news for you. http://www.iflytek.com/en/mobile/iflyime.html

- **AliGenie** by Alibaba:

Users can add over 100 skills to AliGenie and shop with their voice on Alibaba's e-commerce sites. Many of these commands can be activated by saying "Tmall Genie" in Mandarin, according to the Verge. AliGenie can identify objects it "sees" through a phone's camera, including 40,000 medical packages, children's book covers, and more. The medical feature, in particular, is targeted at China's aging population and people with visual impairments.

- **TingTing** by Tencent with WeChat user-base:

TingTing will make access to WeChat applications and services, such as sending voice messages, hands-free

However, it also can be a good opportunity for our clients to establish a good foundation in China market with innovative Voice Recognition Feature by partnering with one of the major existing technology. This is how US major AI tech companies are currently trying (Google/ Amazon/ MS) to get into Chinese Voice Recognition AI market.

- **Others**:

US major UI tech companies are partnering with: (either software or hardware)

Xiaomi own AI (partnering with Amazon's Alexa & Microsoft's Cortana)
Lenovo partnered with Amazon
Mobvoi by Google investment
cf) **Rokid** partnered with Sonos

One other opportunity for our clients would be acquiring one of the Chinese Voice Recognition AI startups as how other companies tried:

Lenovo with AISpeech
Raven Tech acquired by Baidu
Kitt.ai acquired by Baidu

Or can develop the own AI & algorithm in the future:

"Bank, open the checking account"
"Bank, sync my personal info"
"Bank, fund 10000 RMB to checking account"
"Bank, what's my balance?"
"Bank, how's the US currency rate today?"
"Bank, buy XYZ in Amazon"

https://www.huawei.com/us/about-huawei/publications/winwin-magazine/31/iflytek-ai
https://www.cbinsights.com/research/china-voice-assistants-smart-speakers-ai/

Rise Of China's Big Tech In AI: What Baidu, Alibaba, And Tencent Are Working On (April 2018)
https://www.cbinsights.com/research/china-baidu-alibaba-tencent-artificial-intelligence-dominance/

- **UX design for AI product**

    - Define the personality of the AI bot
    - Design the activation experience
    - Design the starting point, and give clear options
    - Identify the primary engagement path
    - Scriptwriting- design the conversation
    - Does it need to add extra logic?
    - Role-playing — prototyping & user testing for AI bot
    - Success matrix for AI design
    - User Privacy V.S. Smart AI

https://uxdesign.cc/ux-design-for-ai-products-1c2e87db8569

- **Voice UI Principle**

    - Discovery and expectation management
      : Set user expectations well in order to avoid false expectations.
        - Users should be aware of what the tool can, and cannot do
        - Users should expect most benefit from minimal input
        - Prepare for undiscovered and unexpected usage
        - Educate the user about the unexpected

    - Design for forgiveness
      : The AI will make mistakes. Design the UI so users are inclined to forgive it.
        - Design the tool in a way that users will forgive it when it makes mistakes
        - Design delightful features to increase the likelihood of forgiveness
        - Design ability to use AI without internet connectivity

    - Data transparency and tailoring
      : Be transparent about collecting data and offer users the ability to tailor it.
        - The AI should be transparent in what data it has of the user
        - Users should be able to provide input so the AI can learn
        - Users should be able to adjust what AI has learned

    - Privacy, security, and control
      : Gain trust by driving privacy, security and the ability to control the AI.
        - Design top-notch security for users to trust AI with personal data
        - Prove delivery on promises by offering test runs

        - Design ability for users to intervene and take over control
        - AI should learn from user's intervenience
        - AI should not do anything without the user's consent
        - AI should notify users of system errors

https://blog.prototypr.io/how-to-design-for-ai-enabled-ui-77e144e99126

- **Voice UI trend/ evolution in China**

  TBD

3. COMPETITIVE & COMPARATIVE ANALYSIS

3-1. US

- ALLY
    - App signup flow
    - Website https://www.ally.com/bank/viewrates/?type=cd

    - Related Article
        - https://www.valuepenguin.com/banking/ally-bank-review
        - https://www.thebalance.com/ally-bank-review-the-pros-and-cons-315132

- Other Online Banks:
  https://www.nerdwallet.com/checking-accounts?trk=nw_gn2_4.0

- Charles Schwab
    - App
    - Website

- Bank of America
    - App
    - Website

- Chase
    - App
    - Website

- Venmo
- Chase pay
- Apple pay
- Samsung pay (android)

3-2. CHINA

- ICBC (Industrial and Commercial Bank of China)
    - App (Chinese version)
    - App (International version)
    - Website
- Bank of China
    - App (Chinese version)
    - App (International version)
    - Website http://www.boc.cn/en/
- China Construction Bank
    - App (Chinese version)
    - Website http://www.asia.ccb.com/hongkong/personal/accounts/checking.html
- China Merchant Bank
    - App (Chinese version)
    - Website http://english.cmbchina.com

4. RESEARCH ABOUT CHINA

4-1. Regarding Target User's lifestyle

- Popular/Dominating **Tech companies/ app/ site** in China

- For general description: check page 37 - 41

- **social media**
    - Weibo (by Sina 新浪)
    - Wechat ("weixin" by Tencent/QQ- TOP 3 Tech in China: BAT)

- **search engine**
    - Baidu (by Baidu, 百度- TOP 3 Tech in China: BAT)
    - Sina (新浪)
    - Sohu (搜狐)
    - QQ (by Tencent, 腾讯- TOP 3 Tech in China: BAT)

- **e-commerce**
    - Alibaba.com (阿里巴巴 B2B by Alibaba- TOP 3 Tech in China: BAT)
    - 1688.com (阿里巴巴 B2C by Alibaba)
    - taobao.com (淘宝网 C2C in Alibaba)

cf) Alibaba Group
https://seekingalpha.com/article/4201622-alibaba-group-holding-limited-2018-q2-results-earnings-call-slides

- **bank (most popular Top 5)**
    - ICBC (Industrial and Commercial Bank of China) 中国工商银行
    - BOC (Bank of China) 中國銀行
    - CCB (China Construction Bank) 中國建設銀行
    - Agricultural Bank of China, 中國農業銀行
    - Bank of Communications 交通银行

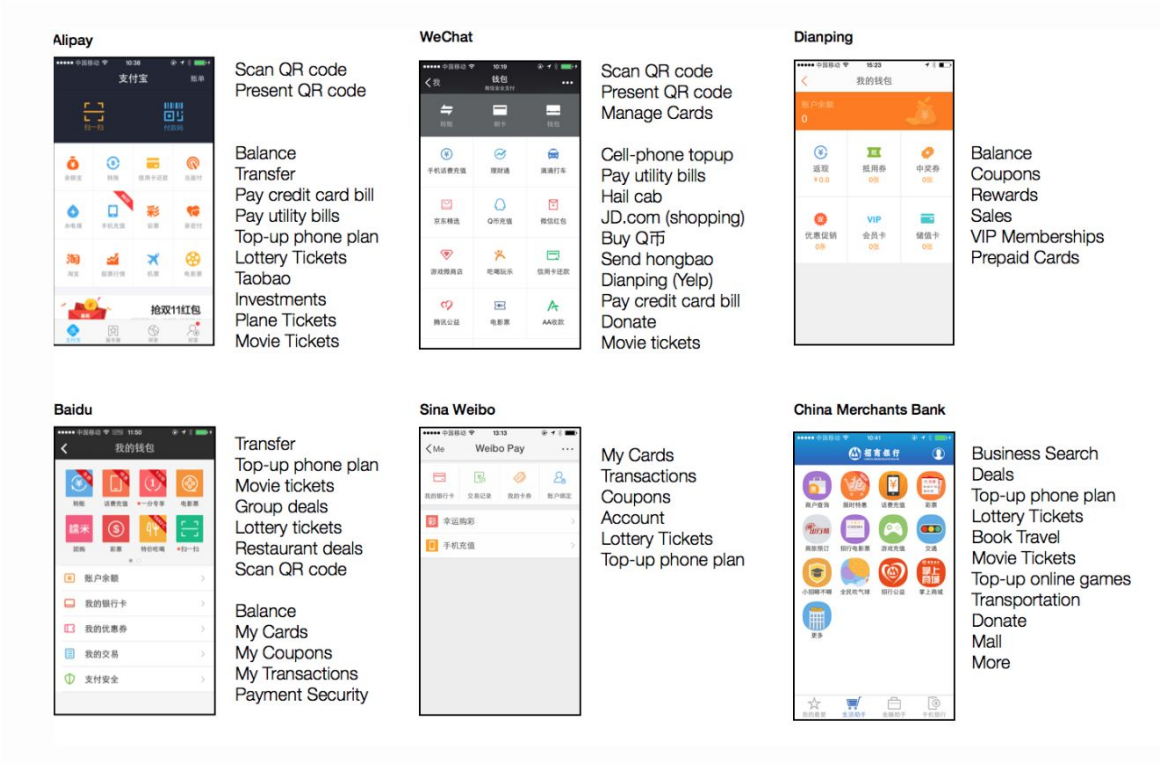
    cf) China Construction bank (Hong Kong)
    cf) China Merchant Bank (US)

- **Chinese market mobile app UI trends**

    - Chinese apps rely on two ways of typing in Chinese characters: Pinyin, a system of Latin transcription of Mandarin pronunciation of Chinese characters, and voice

input. Some apps accept Latin characters as search terms and resolve them to Chinese-language results.

- Chinese apps include banking apps, UI is very icon-heavy. There are universal conventions among the icons and they are generally used in all the major apps.



- Related Article:
  - https://mlsdev.com/blog/85-how-to-localize-for-the-chinese-market-mobile-app-ui-trends
  - https://blog.prototypr.io/chinese-mobile-app-design-tips-for-westerners-4e3b36e4739f

- **Apps Within Apps: UX Lessons from WeChat Mini Programs**
  https://www.nngroup.com/articles/wechat-mini-programs/
  - Summary: Our user studies in China found that embedded-app designers must consider the context of use, the core functionality of the parent platform, and how the programs will be used.

4-2. Regarding Our Clients research

- **High Net Worth Individuals (HNWIs) in China**
  - http://www.chinadaily.com.cn/a/201804/15/WS5ad30d10a3105cdcf6518547.html

  cf) High Net Worth Individuals (HNWIs) https://www.investopedia.com/terms/h/hnwi.asp

- **3 biggest challenges Chinese face when buying property abroad**
  - https://list.juwai.com/news/2017/05/3-biggest-challenges-chinese-face-when-buying-property-abroad

- **Tier 1 & 2 cities in China**
  - http://multimedia.scmp.com/2016/cities/
- **The Rise of FinTech in China: Redefining Financial Services (Dec/2016)**
  - https://www.ey.com/Publication/vwLUAssets/ey-the-rise-of-fintech-in-china/$FILE/ey-the-rise-of-fintech-in-china.pdf

- **China Private Wealth Report 2017**
  China Private Banking Industry: Steady Wins the Race
  - http://www.bain.cn/pdfs/201708170645512300.pdf

- **Hurun Report**
  - http://www.hurun.net/EN/Article/Details?num=670D27DA6723

- Banks risk $1 trillion payment business that apps make look easy
  - https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/banks-risk-1-trillion-payment-business-that-apps-make-look-easy/articleshow/66455732.cms
    - About corporate cross-border/ global payment in China
    - The article is from 2016 but showing the paradigm of money flow in China
      - The global payments innovation initiative, SWIFT partnered with banks around the world to help give corporate clients more information on fees and real-time updates on transactions. That transparency pushes correspondent banks to work faster and keep fees competitive. Chinese banks, already facing the stiffest competition from apps, are among the most enthusiastic supporters, according to Newman.
      - JPMorgan Chase & Co. has partnered with 75 banks in its Interbank Information Network, which uses blockchain to speed cross-border payments.
      - Money there now flows mainly through Alibaba Group Holding's Alipay and Tencent Holdings Ltd.'s WeChat Pay, which combine social media, commerce, and financial services. Consumers sent more than $2.9 trillion inside the two systems in 2016.

5. RESEARCH ABOUT DIGITAL BANKING

- Why Digital Banking Should Include A Human Component
  https://thefinancialbrand.com/76311/human-digital-banking-experience-trends/
    - human aspects that can drive engagement, loyalty and brand satisfaction
    - Bond (human-centered conversational AI platform): seeks to understand consumers' financial goals, and help them get there by optimizing spending, savings, and investment.
    - Meniga seeks to help banks personalize the digital user experience and develop sustainable meaningful engagement. Golden, focused on improving the financial well-being of older adults through inter-generational solutions.

- 4 Key Strategies To Create a Future-Proof Digital Bank
  https://thefinancialbrand.com/75610/digital-omnichannel-open-banking-platform-strategy-trends/?internal-link
    - Four Pillars of the Digital-First Bank:
    - Omnichannel Banking. The streamlining and integration of channels to ensure a positive and seamless customer journey across all potential touchpoints.
    - Modular Banking. A systems architecture that has interchangeable components that can react to market and institutional changes quickly.
    - Open Banking. The ability to use open APIs to connect internal and external capabilities, building experiences that may extend beyond banking services.
    - Smart Banking. The use of advanced analytics to leverage data for personalized engagement and experiences.
    - With a digital-first foundation, financial insight and personalized advice are available in real-time. Most importantly, this insight is not just available internally but is distributed to the consumer instantly, building trust and satisfaction. The customer or member realizes that you know them, are looking out for them, and are going to reward them with enhanced value propositions.

- Financial Institutions Failing To Humanize Digital Banking Experiences
  https://thefinancialbrand.com/76165/financial-banking-human-digital-experience/

- Digital Banking Wins, But Don't Close Branches Yet
  https://thefinancialbrand.com/76584/digital-banking-trends-expectations/

- Why Millennials Refuse To Open Bank Accounts Digitally
  https://thefinancialbrand.com/75748/millennials-mobile-banking-online-digital-account-opening/