Project Description:

The theme that our team, **VisaPlease** has selected is Small Business Merchants and our solution will be based in America. More than 99% of businesses in America are made up of Small Business Merchants. They play the most important role in driving America's economy. However, these small business merchants are affected significantly more than their larger counterparts by the pandemic. Most of them do not have sufficient experience with global pandemic and hence have no idea what to do during one. Also, with information overload on the Internet, it is hard for them to ensure that they do not miss out important things to take note of during a crisis.

As Visa's interns, our team, VisaPlease has always dreamt of working on something that counts towards public good and yet at the same time, benefits Visa's business model.

This is how we came up with **VRecover**, a progressive web app powered by Visa's APIs that benefits both Visa and Small Business Merchants.

VRecover allows small business merchants to:

1. Check their business recovery score from pandemics such as COVID-19
2. Identify their strengths and weaknesses which they might have overlooked.
3. It also provides information on nearby suppliers with the help of VISA APIs
4. It provides tips based on data analysis for faster business recovery too.

After the hackathon, we plan to implement an emergency point of sale function in the web app so that merchants can accept payments with just a mobile device and mobile signal. This could be utilised using Visa Direct API.

We are also planning on implementing another function that will allow merchants to place orders for their business supplies from nearby local suppliers.

Another possible function that we might consider implementing is to allow merchants to manage their inventory more effectively.

Implementation

To implement our solution, we need to create a calculator that calculates the **business recovery score** for merchants first.

Business Recovery Score Calculator

First of all, under the **business recovery score**, we came up with 5 subscores:.

1. General criteria for a small business emergency loan (%)
2. How well has your business been performing? (%)
3. How good is your cash flow? (%)
4. Tech-savviness of your business (%)
5. Evaluation of your suppliers (%)

Merchants will answer the questionnaire and based on their answers, we will calculate all subscores before calculating the **overall business recovery score**.

Questionnaire

1) General criteria for a small business emergency loan (%)

Question 1: Is your business a small company with 500 or fewer employees?

Question 2: Is your small business's tangible net worth lower than $15 million and your average net income for full 2 fiscal years prior to application lower than $5 million?

Question 3: Are you a sole proprietor, independent contractor, or self-employed?

1st Subscore = (No. of criterias met)/3 * 100%

2) How well has your business been performing? (%)

Question 1: What was your net profit last year?

Question 2: What was your cost of investment last year?

Return of Investment (ROI) = (Net Profit / Cost of Investment) x 100

ROI >= industry average : ROI Score = 70

ROI < industry average : ROI Score = 0

Industry average from : https://csimarket.com/screening/index.php?s=roi&pageS=1&fis=

ROI >= 0% : ROI Score = 30

ROI < 0% : ROI Score = 0

Final ROI Score : sum of all the ROI scores/100 * 33.333% (Maximum score is 100)

Question 3: How many units have you sold 2 months ago?

Question 4: How many units have you sold last month?

Monthly sales volume growth = (no of units sold last month - no of units sold 2 months ago)/no of units sold last month x 100

Use Merchant Measurement API to get sales volume growth (MoM) of the merchant's category and compare with the merchant.

Monthly sales volume growth of merchant >= merchant's category : sales volume score = 70

Monthly sales volume growth of merchant < merchant's category : sales volume score = 0

Monthly sales volume growth of merchant >= 0% : sales volume score = 30

Monthly sales volume growth of merchant < 0% : sales volume score = 0

Final Sales volume growth score : sum of all the sales volume scores/100 * 33.333% (Maximum score is 100)

Question 5: What was your net sales last year?

Net margin % = (Net profit/Net sales) x 100

Net margin >= industry average : net margin score = 70

Net margin < industry average: net margin score = 0

Industry Average:
http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/margin.html

Net margin >= 0 : net margin score = 30

Net margin < 0 : net margin score = 0

Final Net margin score : sum of all the net margin scores/100 * 33.333% (Maximum score is 100)

2nd Subscore = Final ROI Score + Final Sales volume growth score + Final Net margin score

3) How good is your cash flow? (%)

a) Monthly cash flow before the pandemic

Question 1: What was your monthly cost before the pandemic?

Question 2: What was your monthly revenue before the pandemic?

Question 3: How much cash did the company have on hand on a monthly basis before the pandemic?

Question 4: How much outstanding debt did the company have on a monthly basis before the pandemic?

Question 5: What were the total monthly payment deferrals given to your customer before the pandemic?

Question 6: What were the total monthly payment deferrals received from your suppliers/governments/banks before the pandemic?

b) Cash flow last month

Question 1: What was your cost last month?

Question 2: What was your revenue last month?

Question 3: How much cash did the company have on hand last month?

Question 4: How much outstanding debt does the company have last month?

Question 5: What were the total payment deferrals given to your customer last month?

Question 6: What were the total payment deferrals received from your suppliers/governments/banks last month?

Net payment deferrals = payment deferrals received from suppliers - payment deferrals given to customers

Net Cash flow = Cash on hand – Outstanding Debt + Revenue - Cost + Net payment deferrals

% Change in CashFlow = (Net Cash Flow last month - Net Monthly Cash Flow before pandemic) / Net Cash Flow last month x 100%

% Change in CashFlow > 0 : Cash_Flow_Score = 30

% Change in CashFlow < 0 : Cash_Flow_Score = 0

Net CashFlow last month > 0 : Cash_Flow_Score = 70

Net CashFlow last month < 0 : Cash_Flow_Score = 0

3rd Subscore = Sum of all the Cash_Flow_Score

4) How tech-savvy is your business? (%)

Question 1: Do you have an online website? (Drop down: Yes or No)

Yes : Website_Score = 100

No : Website_Score = 0

Question 2: Do you provide any online ordering and delivery services? (Drop down: Yes or No)

Yes : Delivery_Score = 100

No : Delivery_Score = 0

Question 3: What social media platforms are your business on? (Checklist: Facebook, Facebook Messenger, Instagram, Pinterest, Others)

Checked 0 : Social_Media_Score = 0

Checked 1 : Social_Media_Score= 25

Checked 2: Social_Media_Score= 50

Checked 3: Social_Media_Score= 75

Checked 4 or more : Social_Media_Score = 100

Use Merchant Locator API to check for the number of terminal types and check for recency of last transaction.

0 terminal type : Terminal_Score = 0

1 terminal type : Terminal_Score = 33

2 terminal types: Terminal_Score = 67

3 terminal types or more : Terminal_Score = 100

Recency of last transaction = Within last 365 days : POS_Recency_Score = 100
Recency of last transaction = More than 365 days : POS_Recency_Score = 0

4th Subscore = 0.2(Website_Score) + 0.2(Delivery_Score) + 0.2 (Social_Media_Score) + 0.2(Terminal_Score) + 0.2(POS_Recency_Score)

5) Evaluation of suppliers (%)

Accessibility to suppliers (50%)

Question 1: How many suppliers do you have?

Question 2 to 4 are to be answered for each supplier.

Question 2: What is the name of the supplier company?

Question 3: Is the supplier company open now?

Answer: yes -> check the answer to question 4

Answer: no -> move on to the next supplier and start over from question 2.

Question 4: Is the supplier in the same country or in another country?

Answer: another country -> check the answer for question 5a

Answer: same country -> check the answer for question 5b

Question 5a: Does your supplier provide world-wide delivery now?

Answer: yes -> check the answer for question 6a

Answer: no -> go to the next supplier and start over from question 2. (not accessible, take it as it is not reliable)

Question 6a: Which global shipping services does your supplier use?

List of global shipping services:
https://www.linnworks.com/covid-19/global-shipping-services

Answer : Fedex (Status : Orange)

Answer: UPS (Status: Orange)

Answer: USPS (Status: Green)

Question 5b: Does supplier provide local delivery?

Answer: yes -> check question 7

Answer: no -> check question 6b

Question 6b: Within what distance (x) is considered accessible to you?

Find the supplier using Merchant Locator API within x distance.

If merchant locator api return one or more supplier, give 100%

If return 0 supplier, move on to the next supplier and start over from question 2.

Reliability of suppliers: (50%)

Question 7: Is/Are your suppliers supporting you?

Question 8: Are your suppliers recovering?

Question 9: Have your suppliers been consistently providing high quality goods?

Calculation for evaluation of suppliers:

1) weightage of each supplier = 100 / no of suppliers
2) Initialise accessibility score = 0
3) For each supplier: if it is not open now, move on to the next supplier. (accessibility score = 0)
4) For each supplier: if it is open now, (accessibility score += 50)
5) For each supplier: if it is local, (accessibility score += 20) ,
    a) if it provides local delivery (accessibility score +=30) 100% accessibility
    b) If it does not provide local delivery, 0% accessibility.
6) For each supplier: if it is overseas, (accessibility score += 0)
    a) If it provides global shipping services (accessibility score += 20)
        i) If status of selected shipping services = green, accessibility score += 30
        ii) If status of selected shipping services = green, accessibility score += 15
        iii) If status of selected shipping services = green, accessibility score += 0
7) If that supplier is not accessible at all, merchants will not reach question 7 and they will move on to the next supplier. Then accessibility for that supplier will be 0%.
8) Once that supplier is considered not accessible, their reliability will not be considered too. (0% score for total)
9) Once they reached question 7, accessibility = 50% x accessibility score and now we check for reliability.
    a) if qns 7's answer is yes, they will get 16.66666% for reliability
    b) if qns 8's answer is yes, they will get another 16.666666% for reliability
    c) if qns 9's answer is yes, they will get another 16.666666% for reliability

Max is 50% for reliability

Score for one supplier = accessibility score + reliability score

5th Subscore = weightage of each supplier (score of first supplier) + weightage of each supplier (score of second supplier) + ….. + weightage of each supplier (score of last supplier)

Overall Pandemic Recovery Score = 0.2(1st Subscore) + 0.2(2nd Subscore) + 0.2(3rd Subscore) + 0.2(4th Subscore) + 0.2(5th Subscore)

After calculating business recovery score, we will display all the individual subscores and **overall business recovery score** to merchants.

Search Local Suppliers

Merchants will be asked to key in the search radius in either meter/kilometer.

Merchants can then search for local suppliers within the search radius by their name and country code or by category alone.

After clicking on search, the local suppliers information will be provided in the map below.

Track your progress

Based on the information collected from merchants for the past 20 times, a line/bar graph will be provided for **overall business recovery score** and the 5 subscores.

This allows merchants to track and see if they have improved over the past 20 calculations.

Score Analyzer

Merchants will be provided with tips for the subscore if that particular subscore has been continuously dropping for the past 2 calculations.

Market Potential

With all these functionalities, VRecover will definitely guide and help small business merchants to recover from the pandemic stronger than ever.

Not only that, VRecover will also benefit Visa. It can be deployed by card issuers like Bank of America. Visa will then earn services revenue for VRecover's usage of Visa's APIs.

VRecover can also be used alongside with the application process for a new Visa card called "Visa's Pandemic card" for loans to be credited into. This will encourage the usage of VISA's cards and will definitely benefit Visa's business model.

Card Issuers will definitely have a vested interest to deploy VRecover to their customers as VRecover provides them with more visibility to loan applicants' information like **risk of default** and **business recovery score** which will **help them** to **issue more good debts** and **avoid bad**

debts.

Most importantly, there are no other products out there that have the same functionalities as VRecover. VRecover will be the first platform that helps small business merchants to come back stronger than ever after being affected by pandemics like COVID-19. With no competitors in the market yet, it would be extremely beneficial for Visa to take on this opportunity and monopolise the industry.

To sum up, the market potential for VRecover is **huge** and has **huge scalability**. Our current prototype is only scraping the surface of calculating business recovery score and risk of default due to our lack of time, 13 days. With more in-depth research and more sophisticated methods of calculating business recovery score, the reliability of VRecover will be even more phenomenal and the market potential for this will definitely snowball.

APIs Used – Merchant Locator API, Merchant Measurement API

Technology Stack – React.js, Redux, Node.JS, Firebase

IP & Third Party Software – Vercel

Built with – React.js, Redux, Node.JS, Firebase

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