# Abstract

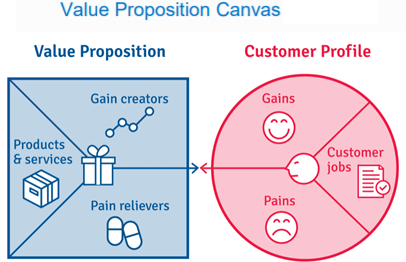
# Project Analysis

## Introduction & Brief Project Outline (Done2)

Following the covid-19 pandemic, restaurant owners are facing an uphill battle against the prospect of their future financial success. The skyrocket global unemployment rate has led to rising anxiety amongst individuals to spend money in restaurants. Furthermore, we are likely to observe a decline in the supply of waitering jobs given the uprising number of University graduates every year and the aging developed countries. To support restaurant owners through this difficult time, an interesting software project – Hi! – has been pioneered, a web-based platform that primarily takes orders and payments for restaurant customers.

## Requirement Statements (Doing)

Although the ability to take orders and payments via a web app is a sufficient business concept, it is still an ideal practice to examine the full scope of the project requirements in the context of a restaurant. We will not consider the takeaway aspect of the restaurant model because this nature of business requires large client base which we don’t have. To analyse all the possible requirements of the project, we will adapt the standard industrial practice - Value Proposition Canvas (2014).



VPC defines all the possible tasks each restaurant each stakeholder (customers, chefs, waiters, owners) wants to accomplish, the gains (solutions) acquired, and the pains (issues) resolved by the software. We will also identify the software features (products & services) that act as their gain creators and pain relievers.

### Sit-In Customers

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| --- | --- |
| Customers’ Jobs | Gains, Pains, Gain Creators, Pain Relievers, Product & Services, Essential Points |
| Feel wanting to eat out | Add register users to the email list and inform them new offers to stimulate their interest to eat out  Collect the phone numbers of the registered users and text them relevant offers too  Advertise our app through social media (Facebook Ads), web ads or letters if we can collect their home address with a takeaway service  Have YouTube Influencer to promote our app – we can have loyalty points (£10 discount for £100 spending/ discount special days to encourage user to eat out) |
| Find a restaurant they want to go online | We can display all registered restaurants based on proximity, price, type of food, size, atmosphere, reviews, car park costs and availability  Adapt search engine optimisation for Google search  Give discount if registered users promote our app using their Facebook and Instagram  Give discount if registered users post the food and drinks, they ordered onto our platform. This will improve the profile picture of the restaurants because some restaurants may not know or want to post their meal pictures up due to laziness or not knowing this functionality. We can provide a template for business owners to create a professional profile  We can have the reviews displayed under the restaurant’s name (thumb up, OK, thumb down)  Post our logo onto a visible place in the restaurant so people can see the menu even they are outside the restaurant. They can also order food and drinks even when they are not seated  Some people may not iterate with the use of a phone. We can provide easy guidance (speed tutorials) to improve their user experience |
| Find the location of the restaurant | People may find the restaurant using the google map function in our platform  For each restaurant, we will have an address and postcode that links to Google Map so they can see the approximate location of the restaurant in a wider scope  Some users may not know this functionality if it is not clearly displayed. We will add a “click” sign to show that the address and postcode are clickable  We can ask the restaurant owner to post the surrounding of the restaurant at the front page so customers can identify the restaurant easily. |
| Reserve a table | We can have an online booking system  Telephone, Platform (e.g. OpenTable, 5pm), go without reservation |
| Go to the restaurant | Driving (Google Map), walking, cycling |
| Go inside the restaurant and wait for a waiter | Wait until a waiter notices, use a seat allocation robot |
| Waiter takes customers to a table | Waiter may need to find an unreserved empty table with a table management software |
| Take a seat | The app can record the occupied and reserved seats. |
| Take the menu | The app can display all the food and drinks the restaurant offers.  The customers may find the images too small to read.  The customers can see the images of the food and drinks offered instead of words  We can use a QR code to direct user to our web-app. |
| Discuss the food and drinks they want with their friends and family | The app can display popular food and drinks first. The app can display the food and drinks available at the restaurant and the food and drinks they have clicked to maximise the size of the images. |
| Come up with the food and drinks they want as a group | Customers can add and remove the food and drink they want as they go through the menu. |
| Wait for the waiter to come up | Using our app, customers can order the food and drinks they want once they have been seated. |
| Listen to waiter’s meal recommendations | Our app will place popular meals first. |
| Tell waiter the food and drinks they want to have | The customer can click and discard the food and drinks they want to order |
| Get asked whether they want the food to come separately or together | After the customer pays for their bills, a notification will pop up asking whether they want the meals to come together or separately |
| Have a conversation and wait for the food and drinks to come | The customer will be redirected to our all-restaurants platform so they can chat about other good restaurants  Have ads for our platform  Introduce multi-go discount- if the app user go to the specified three places (restaurant, pool centre and attraction), they can get a 10% off discount for all. We can track their activity using their phone number.  Related restaurants (based on the city, food, popularity, price, review) will be ranked and higher-ranking restaurants will be displayed first. |
| The food and drinks are served | We can adapt an AI system to analyse the time taken for each meal. This will predict when the meals are ready to serve.  We can have a sound notification to inform the customer when the food and drinks are cooked after the chefs click food ready. |
| Have the food and drinks | We can create a system to analyse the average time taken customers take to finish a meal to help seat allocation. |
| get asked whether they like the food | We can post a feedback notification about the last restaurant they visited after the customer has paid for their food. |
| Finish the food and drinks | - |
| Have the waiter to collect the plates | The restaurant can adapt a sushi belt (e.g. Yo! Sushi) to deliver food and drinks. |
| Ask for the bills | The app will facilitate the payment process. Remember their bank details based on their phone number using their history setting. However, this will give customers discomfort about security.  We can have a camera card scanning function to auto-type the bank details for the customers.  We will explicitly states that your card details will not be stored into our system. |
| Get the bills | - |
| Pay for bills | The customer will get a succeed notification after the payment is approved. |
| Give a tip | The system will allow customers to type in the tip they want to give to the restaurant at checkout. |
| Leave the restaurant | We can have a progress record to show every user the number of customers are in the restaurants and the time they would need to wait before they can have their meals. |

### Chefs

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| Chefs’ Jobs | Gains, Pains, Gain Creators, Pain Relievers, Product & Services, Essential Points |
| Receive an order | Send the list of food they need to cook directly to the chef  Waiter doesn’t need to type it to the computer system |
| Pick out relevant ingredients | - |
| Cook the food | - |
| Inform waiter the food is ready | Chefs will press completed for the food that they have cooked. Then, the computer system will have a sound notification to tell the waiter that the food is ready to pick up |
| Look at the shift so they know when to work | The computer system can help manage staff rota |

### Waiters

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| Waiters’ Jobs | Gains, Pains, Gain Creators, Pain Relievers, Product & Services, Essential Points |
| If there are customers waiting at the door, approach and greet them | - |
| Take them to the table | - |
| Tell them how to order food and drinks (go to the waiter section, ask for a waiter to come) | The waiter will introduce the app to the customers and ask them to scan the QR code. E.g. Hi, welcome to our restaurant. We have our food pictures posted online. If you can scan the QR code here using your camera, you will then see our menu. |
| Walk away from the customers to give them time to decide for the food and drinks | - |
| After a few minutes, go back to the customers and ask what they want to have for food and drinks | The app will show all the food and drinks available online  The QR code will record the table number the customers are sitting in  The app will show the restaurant logo, categories of the food (e.g. starter, main-course, dessert, alcohol, drinks) |
| Take out ordering paper/ machine | The customer can click the + button to add the food and drinks they want to the cart  The app will show the food and drinks in the forms of image, text and price, whether it is vegan and contains nuts  The app will show the list of food and drinks they ordered in the cart section  After the customers finish picking their meals, they will click the cart to see the order summary |
| Listen and note down what the customers want to have | - |
| Give the order to the chef OR tap the food and drinks they want to have to send it to the chef | - |
| Collect bills and tips | After the customer clicks pay, they will be redirect to the payment portal at which they will enter their card details (card number, expiry date, CCV) by typing or scanning. They can enter their tips value in the tips section. Once they click pay bills and tips, they will be redirected to the all-restaurants sections to see participating restaurants. |
| Clean the restaurants | We can have a task list for each role so restaurant owners can keep track of the things that they will do |

### Restaurant Owners

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| --- | --- |
| Restaurant Owners’ Job | Gains, Pains, Gain Creators, Pain Relievers, Product & Services, Essential Points |
| Recruit chef | - |
| Recruit waiter | - |
| Develop a restaurant website | We can develop a all-restaurants platform whereby customers can see all available restaurants. The platform will summarise all the essential restaurant information so customers don’t need to click on each individual restaurant. A similar platform is 5pm or OpenTable. |
| Advertise the restaurant via platforms such as OpenTable and 5pm | We can also do that as above. Because our primary business is software-waiter. We can quickly acquire mass client base compared to OpenTable or 5pm. |
| Decide on the shifts for the staff | We can have a staff rota function for the restaurant owners to visualise all the roles of the restaurant staffs. So they don’t need to use a piece of paper or other expensive software to arrange staff workload. |
| Pay them daily/ weekly/ monthly | We can arrange an automatic daily/ weekly payroll so the salary payment process will become automatic. However, we need to take into account that some restaurants may not want to do that as they would prefer cash payroll. |
| Taste chefs’ food | We can have a review section so the restaurant owners can know what food customers like and dislike. We can also partner with other professional recipe sites so they can share some insights into better food making. |
| Monitor waiter and chef performance | We can have an advisory system to coach restaurant owners how to motivate staff to work harder. We can deliver online course to teach them how to manage employees. |
| Train waiter/ chefs | We can deploy online tutorials on waiters/ chefs training so restaurant owners can just follow it and adjust it as they need |
| Recruit an Accountant for managing tax and legal issue | We can include accountancy service within our app. We can have a consent opt-in section in which their restaurant financial data will be shared with us. We can deliver online accountancy tutorial to help them mange tax effectively. We can also deliver company growth strategies, hopefully they will binge watch our YouTube channel. |
| Purchase insurance | Currently, insurance services are web-based and very automatic. We can partner with an insurance firm – for each customer we obtain, we will get a commission fee. |
| Maintain the decoration of the restaurants | We can gather artists and interior designers to propose potential restaurant decorations. For each customer we obtain, we will get a commission fee. |
| Purchase new kitchen appliances | We can have videos to show how machinery (e.g. chef’s robotic arms) can help them maximise their productivity. That will encourage people to see and know our channels and encourage sales. |
| Purchase restaurant furniture (tables, chairs) | We can have videos on furniture purchasing guides. We can suggest matching chair and table patterns and colours, and we can refer them to some other stores to encourage their sale. We may take 5% of the total sale. |
| Go to a business wholesale supermarket to buy raw materials every 3-5 days | We can create a system to help restaurant owners to schedule food delivery. For owners who buy their own stocks, we can create a system that has all images of stocks and a list of whether they need to purchase it that week. They can then click the stock they would need to buy that day beforehand and go to the market without forgetting what to buy. |
| Design and print menu with a printing company | All the menus (text and image) will be displayed through our app so customers don’t need to be annoyed by a sheet of text because they will have images instead.  We can make our menu printable so they can update menu details easily. We can partner with a printing company for this. The more quality service we provide, the large pool of customers we will get. |
| Calculate daily revenue for accounting purpose | If the restaurant owners opt-into our system, they can see their daily/ weekly/ annual revenue. |
| Calculate cost and revenue | The restaurant can enter their costs of food and staff into our system, then it will automatically produce the profit they make annually. |
| Pay gas and electric bills monthly | - |
| Think about offers and discounts to attract customers, especially during quiet hours | We can ask the restaurants if they want to offer lower costs meals at quiet times (e.g. 3-5pm).  We can promote different restaurants (e.g. if you have been restaurant A, we will promote dessert parlour B the same day.) |
| Purchase covid-19 equipment (hand sanitizer, masks, wipes) | We can see if we can offer cheaper hand sanitizer, masks and wipes if we connect with suppliers. |
| Ensure social distancing rules (put stickers on each table) | We will adapt the QR code to minimise the contacts between staff and customers |
| Greet health inspection officer | - |
| Greet tax inspection officer | - |
| Register for a food licence (selling, cooking, storing, preparing and distributing food) from the local council | - |
| Ensure the expire dates of the food and drinks | - |
| Ensures the food are cooked properly | - |
| Ensures the food are stored properly | - |
| Obtain feedback from the customers |  |
| Deal with customer’s complaints | We will have a complaint section listing all the complaints customers have. We will show whether the complaint is resolved. |
| Obtain a premise licence for selling alcohol, hot food and drinks between 11pm and 5am or if they provide entertainment such as film screening, sporting events, live music, recorded music, dancing facilities or facilities for making music | We can have a status showing whether the restaurant has an alcoholic licence so they know whether the place will sell drinks |
| Obtain a TV licence if they put a screen in their premises | - |
| Obtain a leaflet licence if they decide to distribute flyers from local businesses, newspapers and other printed materials | - |
| Awareness of food hygiene and health and safety regulation | - |
| Have a repairer contact in case something is broken | We can have a list of local repairers so restaurants owners can refer to them when needed. It can also help us to be at the first rank in the search engine. |
| Legal contracts – restaurant ownerships | - |
| Pay monthly rent | - |
| Think about how to improve the restaurant in terms of the above elements | We can have a YouTube channel explaining different aspects a restaurant can be improved upon |

## Behaviour Driven Development for Minimal Viable Product (Done2)

To prioritise the different software components, we cluster all the requirements into portions that must be completed before March 2021, the minimal viable product; and those that will be achieved after the launch of the project, the future work. We will discuss the future work in the evaluation section.

### User Stories & Acceptance Criteria (Done2)

This section will examine the minimal deliverables that must be completed before the end of the project in March 2021, in terms of the customers, chefs, waiters and restaurant owners. These requirements will also act as the test points for the product.

User Story Template

As a [role]

I want [feature]

So that [benefit]

Acceptance Criteria/ Scenarios

Given [context]

When [event]

Then [outcome]

1. As a Customer

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| --- | --- | --- |
| N | User Stories | Acceptance Criteria/ Scenarios |
| 1a | I want to be able to go to the web-menu platform using the QR code.  So that I can pick, order, and pay for the food and drinks that I want. | Scenario 1: A customer is ordering food themselves (with some help from the waiter)  Given that the customer is seated  Given a QR code  And a phone with a working camera  And a printed set of instructions on the table  And the waiter explains and shows how the QR code scanning works  When the customer holds the camera at a close distance without taking a photo  Then the customer is redirected to the restaurant ordering and payment platform  Scenario 2: A customer cannot order food themselves (even with the help of a waiter)  Given that the customer is seated  And a QR code  And a waiter explains and shows the customer how they can use the QR code to enter the ordering and payment platform  When the customers said that they don’t have a phone  OR  When the phone cannot scan the QR code  Then the staff will take out the menu and order food and drinks for them using their own phone/ ordering paper |
| 1b | I want to be able to see all the food and drinks available (text, image, price) of a restaurant based on the time I arrived. The food will be displayed based on the pre-defined categories set out by the restaurant owners (e.g. alcohol, drinks, starters, main course).  So that I can pick the food and drinks that my friends and I want. | Scenario 1: The customer is picking the food and drinks they want  Given the web-platform  When the customer scrolls the screen horizontally,  Then they can see the food and drink within the same category.  OR  When the customer scrolls the screen vertically  Then they can see the first two food and drink at different categories.  OR  When the customer clicks add an item (+), they will add a food or drink item to the order and they will see a notification (shown for 0.3s) that they have added an item to the order. The total payment amount will also increase accordingly. |
| 1b | I want to be able to proceed from the meal ordering platform to the order summary sections  So that the system knows that I have picked my meals | Scenario 1: The customer is proceeding from the menu ordering platform to the order summary section  Given the food ordering interface  When the customer clicks next OR order summary  Then they will go to the bill summary interface |
| 1c | I want to see the order summary  So I can verify the meals that I will get, the prices of each meal and the total payment amount of the order | Scenario 1: The customer is reviewing the order summary  Given the order summary interface  When the customer clicks next  Then they will go to the payment interface  OR  When the customer clicks back to menu  Then they will be redirected to the food ordering interface |
| 1d | I want to enter my card details  So I can pay for my meals to the restaurant | Scenario 1: The customer is entering their card details  Given the payment portal  When the customer clicks click here to scan card  Then they will be re-directed to the automatic card scanning option and the card number, expiry date and card holder name will be automatically filled in. The customer will then need to type in the security number themselves  OR  When the customer clicks pay by debit or credit card  Then they will see the payment form. They will need to type in the card number, expiry date, security number and card holder name.  OR  When the customer clicks back to menu  Then they will be redirected to the food ordering interface  OR  When the customer clicks order summary  Then they will go back to the bill summary interface  OR  When the customer clicks place order  Then they will be redirected to the payment status page |
| 1e | I want to see the payment status page  So that I can verify if the payment was successful | Scenario 1: the customer has entered incorrect card details  Given the combination of card details is incorrect  When the customer has clicked place order  Then a transaction decline notification will pop up and they will be redirected to the payment portal  OR  Given the combination of card details is correct  When the customer has clicked place order  Then they will be redirect to the successful transaction page then they can exit the interface |
| 1f | I want to cancel my order  So that I can adjust my order | Scenario 1: the customer wants to cancel their order  Given they have successful transaction and have directed to the successful transaction interface  When the customer clicks cancel order  Then the transaction will be refunded and they will be redirected to the food and drinks ordering interface |

1. As a Chef

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| --- | --- | --- |
| N | User Stories | Acceptance Criteria/ Scenarios |
| 2a | I want to know the order summary  So that I know what food to cook  AND  I want to be able to dynamically notify the system when the food is cooked  So that only food that is uncooked is presented to me | Scenario 1: the chefs want to see the list of food that they need to cook  Given a tablet  When the chef clicks the food & drinks list interface  Then they can see the list of food that they need to cook. They can click done when they finish the food. The food item will be greyed and disappear in 3 seconds. Within the 3 seconds, they can click not done if they mistakenly click the not done button. |

1. As a Waiter

|  |  |  |
| --- | --- | --- |
| N | User Stories | Acceptance Criteria/ Scenarios |
| 3a | I want to know the order summary  So that I know what drinks to serve  AND  I want to be able to dynamically notify the system when the food is cooked  So that only food that is uncooked is presented to me | Scenario 1: the waiters want to see the list of drinks they need to serve  Given a tablet  When the waiter clicks the food & drinks list interface  Then they can see the list of drinks that they need to serve. They can click done when they have served the drinks. The drink item will be greyed and disappear in 3 seconds. Within the 3 seconds, they can click not done if they mistakenly click the not done button. |
| 3 | I want to know the table number for which the meal is served  So that I can serve the meals to the correct table | Scenario1: the waiters want to see the table number of the food and drinks ordered  Given a tablet  When the waiter clicks the food & drinks list interface  Then they can see the table number a food & drink item it corresponds to |

1. As a Restaurant Owner

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| --- | --- | --- |
| N | User Stories | Acceptance Criteria/ Scenarios |
| 4a | I want to understand why this Hi software is beneficial to my business (how can I save more money)  So that I can decide if I want to join them |  |
| 4b | I want to have a step-by-step guide how I can register to be a member.  So that I can start getting the benefits of the app |  |
| 4c | I want to know how I can post up the menu details (text, picture, price) to the ordering interface  So that I can start deploying the app to the restaurant |  |
| 4d | I want to know how I can post different menus based on time (morning, afternoon, evening)  So that I can have different menus for different times |  |
| 4e | I want to know how to adjust the meal details  So that I can adjust the price at peak seasons, add new meals and remove meals that are unavailable |  |
| 4e | I want to know how this software company manages my financial data  So that I feel safer about how they use my data |  |
| 4f | I want to add my card details  So that the software company can transfer my business profit to my bank account |  |
| 4g | I want to be able to contact the software company  So that when I stuck or get confused with the platform or encounter a system error, they can solve my problems |  |

* understand the benefits
* have a YouTube channel introducing our products (function, benefits, price, how to join)

1. As a Software Company – Us

* collect all restaurant names and addresses over the internet and send our product information through post

# Software Design

## Product Paper Prototype

## Evaluations for Paper Prototype

## Product Digital Prototype

## Evaluations for Digital Prototype

# Product Coding

# Software Security

# Evaluations

## Requirement Evaluations

## Test Evaluations

## Product Paper Prototype Evaluation

* customers can cancel order

## Product Digital Prototype Evaluation

## Future Work

create a poster for your project

# Bibliography

VPC (2014) Value Proposition Design: How to Create Products and Services Customers Want, John Wiley & Sons.