RBUS7999 – BUSINESS INDUSTRY PLACEMENT

Project Presentation and Report

AI 360

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1.0 Background

1.1 AKA Studio

AKA Studio is a creative agency specializing in branding, design, and digital marketing solutions. With a focus on helping businesses in the Business to Business (B2B) space, AKA Studio offers a range of services including brand strategy, logo design, website development, and social media marketing. AKA Studio combines artistic flair with strategic thinking to deliver unique and impactful solutions tailored to each client's needs. By understanding their client's goals and target audience, AKA Studio crafts compelling brand identities and digital experiences that leave a lasting connection between brands and customers.

1.2 Project Summary

This project aims to enhance the AI 360 Marketer platform of AKA Studio by introducing a Drag-and-Drop Menu Creation feature for restaurant owners. This feature will allow users to design seasonal menus easily through an intuitive interface and include functionalities for menu creation, daily special promotions, and automated social media marketing campaigns.

The project tasks include understanding restaurant challenges, researching social media marketing significance, proposing design and features, crafting a value proposition, and proposing a pricing model. Expected outcomes include comprehensive presentations, conceptual designs, and diagrams illustrating the Drag-and-Drop Menu Creation feature's design and functionality.

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1.3 Drag and Drop Menu and Competitors Analyze

1.3.1 Drag and Drop Menu

A drag-and-drop menu refers to a user interface element that allows users to drag items with a cursor and drop them into new positions. This type of interface is usually associated with web applications or software platforms that prioritize user experience and ease of customization. Drag-and-drop functionality falls under the category of direct manipulation, proving particularly advantageous for tasks such as grouping, reordering, moving, or resizing objects (Laubheimer, 2020).

In a drag-and-drop menu, users can interactively rearrange menu items, categories, or options simply by clicking, dragging, and dropping them into designated positions. This feature can enhance usability and efficiency. It enables users to personalize their menu layout according to their preferences or workflow requirements.

Such menus aim to provide users with intuitive and flexible ways to organize and navigate through content or functionality. When appropriately applied, drag-and-drop is easily comprehended and adopted by users and the interactions it facilitates can be broadly categorized into resizing and moving objects, each requiring a distinct micro-interaction design to ensure intuitive and responsive interfaces (Laubheimer, 2020).

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1.3.2 Competitors Analyze

The competitors of AI 360 menu creation features cover several categories including iPad systems, embedded Point of Sales (POS) systems, Quick Response (QR) code ordering platforms, online ordering and delivery services, and menu management software (Table 1.0).

Competitors System	Direct Competitors	Substitute Competitors	Replacement Competitors	Other Competitors
iPad Systems	Square for Restaurants	/	/	/
	Toast			
	Revel Systems			
Embedded POS Systems	/	Clover POS	/	/
		Lightspeed		
		Upserve		
QR Code Ordering Platforms	/	/	Zapper	/
			GoTab	/
Online Ordering and Delivery Services	/	/	/	DoorDash, Uber Eats
Menu Management Software	/	/	/	Menuat, Breadcrumb, MenuDrive

Table 1.0 AI 360 Menu Competitors

<u>Direct Competitors:</u>

Square for Restaurants, Toast, and Revel Systems offer comprehensive POS solutions directly competing with AI 360's drag-and-drop menu creation.

Substitute Competitors:

Clover POS, Lightspeed, and Upserve provide alternative POS systems serving as substitutes for restaurant needs.

Replacement Competitors:

Zapper and GoTab alternative solutions potentially replacing the need for AI360's menu creation feature.

Other Competitors:

DoorDash, Uber Eats and menu management software offer could potentially venture into the same space as AI360.

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2.0 Market Research

2.1 Methodology

The methodology utilized to address the challenges faced by AKA Studio and understand the needs of both AKA Studio and University of Queensland (UQ) students is based on a structured approach outlined by the Double Diamond Diagram (Figure 1.0). This framework (Wedell-Wedellsborg, T., 2017) guided us through a systematic exploration and refinement of ideas, resulting in actionable solutions tailored to the identified issues.

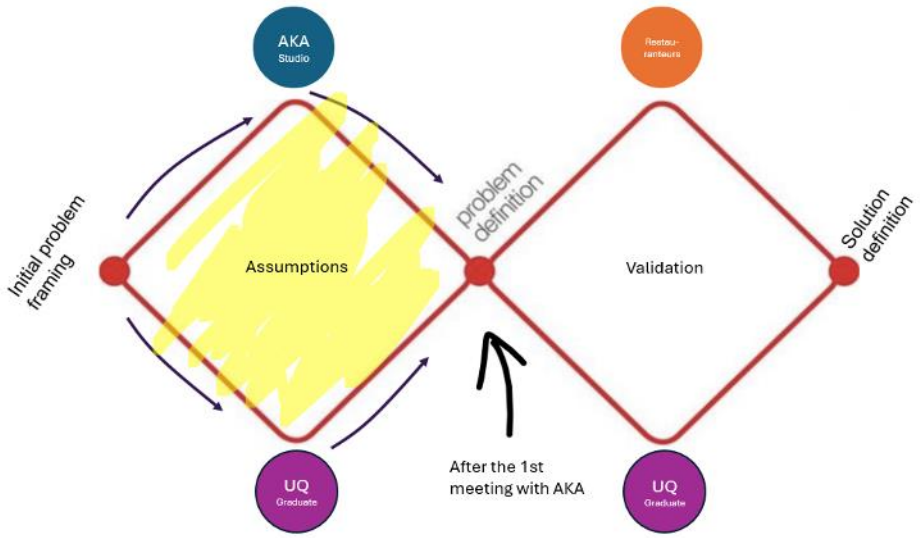

Figure 1.0 Double Diamond Diagram

At the outset, we delved into understanding AKA Studio's background and objectives, laying the groundwork for our subsequent efforts. Initially, we embraced divergence, where disparities between AKA Studio's perspective and our understanding surfaced. This phase involved exploring initial assumptions and perceptions.

However, our understanding evolved following our initial meeting with AKA Studio, leading to additional insights that altered our initial assumptions. This marked the convergence of the diagram, transitioning into problem definition. Through collaborative efforts, AKA Studio and UQ students bridged the gaps in understanding, refining our assumptions in the process.

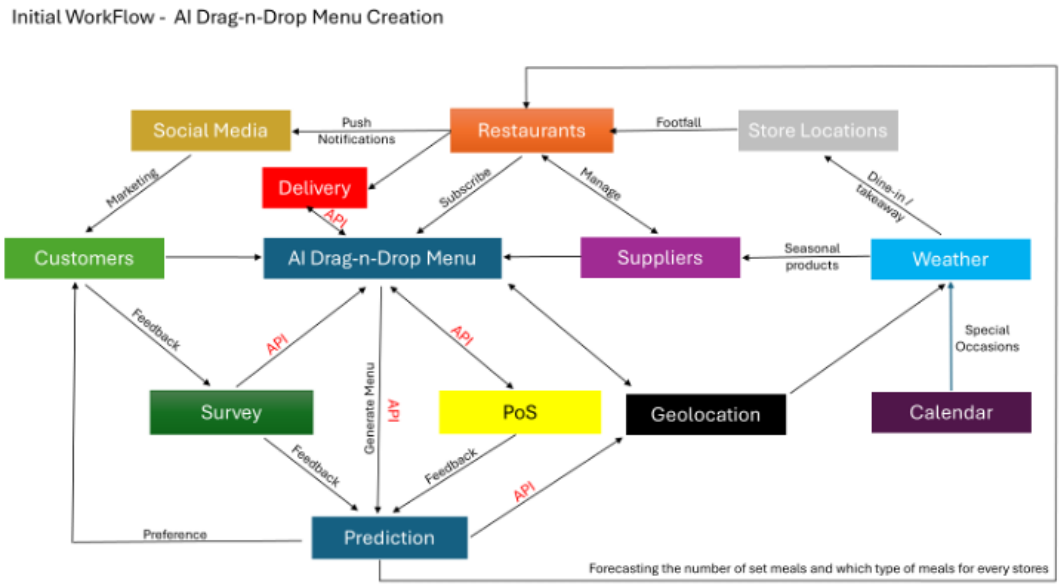

Figure 2.0 AI Drag-n-Drop Menu Creation Initial Workflow

This workflow (Figure 2.0) illustrates a comprehensive system where various components interact to enhance the operations and customer experience within the restaurant industry. It begins with customer interactions, where AI drag-and-drop-driven menus cater to individual preferences, aided by feedback loops from both customers and surveys to continually refine predictions. Social media plays a pivotal role in marketing to customers, while restaurants leverage push notifications to engage with their audience and manage suppliers efficiently. Additionally, the system incorporates predictive analytics to forecast meal demand based on factors such as weather and special occasions, optimizing inventory and menu offerings across different locations. Through an Application Programming Interface (API), these predictions are integrated with point-of-sale systems for real-time feedback and adjustments. Furthermore, the workflow utilizes geolocation data to tailor offerings based on footfall and local weather conditions, ensuring optimal service and customer satisfaction. In essence, this interconnected ecosystem harnesses AI drag-and-drop and data analytics to streamline operations, personalize experiences, and drive business growth in the restaurant industry.

Building upon these refined assumptions, we conducted structured interviews, questionnaires, and empathy mapping exercises to validate assumptions. Interviews played a pivotal role in our methodology, providing valuable insights into the needs and challenges faced by AKA Studio. Recognizing the significance of understanding diverse perspectives, we meticulously selected 29 mom-and-pop restaurants as potential initial customers, as they represent a crucial demographic for our study. Additionally, we interviewed a well-known chain, 7-Eleven, to explore whether similar systems were already in place within larger establishments. This strategic choice revealed that chains like 7-eleven typically have end-to-end inventory management systems, whereas mom-and-pop restaurants, each followed by detailed analysis, to extract meaningful data and uncover patterns that inform our understanding of the challenges faced by small-scale businesses like AKA Studio which uncover further insights into AKA Studio's pain points. Subsequent data analysis, utilizing visualization techniques like bar charts and pie charts, helped us comprehend the underlying issues.

This synthesis of gathered data led to the identification of three distinct persona types: those seeking to predict crowd flows to minimize wastage, those aiming to augment profitability, and those striving to enhance their social media presence. These personas encapsulated the diverse needs and aspirations of AKA Studio and provided a focal point for further exploration.

Validation of identified issues affirmed the relevance and significance of the pain points. Based on these validated insights, two overarching solutions emerged:

They are firstly, optimizing profitability and minimizing wastage through predictive crowd management techniques. By leveraging data-driven insights to anticipate customer flows, AKA Studio can streamline inventory management processes, enhancing profitability. Tailoring offerings to customer preferences further augments profitability.

Secondly, enhancing social media presence to expand customer reach and engagement. This solution aims to capitalize on existing customer bases while attracting new patrons through strategic digital marketing initiatives.

Lastly, this methodology seamlessly navigated through exploration, validation, and solution formulation, guided by the Double Diamond Framework. By aligning with the needs of AKA Studio and UQ students, the resulting solutions offer actionable strategies to address challenges and propel AKA Studio toward sustainable growth and success.

2.2 Data Collection

In this section, we'll explain the questions we prepared and how we obtained the answers. As outlined in the methodology, two comprehensive pain points emerged from the hypotheses we tested. The questions and their methodology are crucial in the process from hypothesis to validation. First, we created a questionnaire with 16 questions (Appendix 1).

We then selected 30 small to medium-sized restaurants. These were individual establishments, not franchise restaurants, which we sought out and selected. We chose more than 30 establishments to account for those that might not provide answers. Additionally, we visited the establishments directly and inquired with the owners or relevant personnel using these questions. If no one was available, we either revisited on another date or selected a different establishment. They typically answered these questions in about 5 minutes each.

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3.0 Market Analyze

3.1 Findings

After collecting the survey, we have sliced and diced the data into meaningful feedback that helps us understand the results clearly and accurately.

Our main priority is to find out if the AI Drag-n-Drop Menu is appealing to the restaurants. As evident in both Table 3.1 and Table 3.2, we have mainly surveyed full-service restaurants and dine-in restaurants, which account for 50% and 69% respectively.

Style	Amount	Percentage
Full Service	12	50%
Self Service	3	13%
Take Out	8	33%
Bar	1	4%

Table 3.1 Dining Service Style

Type	Amount	Percentage
Restaurant	20	69%
Café	6	21%
Bar	1	3%
Bubble Tea	2	7%

Table 3.2 Type of Store

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Restauranteurs were asked if an Artificial Intelligence (AI) system with an app-based on-screen drag-and-drop menu for identifying customer preferences was necessary, the response was nearly split, and we can only confirm that there is mixed feedback from respondents. We cannot validate such an assumption.

Question: Do you need an AI system that is app-based on-screen for customers to drag-n-drop menu, in which you can then tell what is your customers' preferences?		
Answer	Amount	Percentage
Yes	15	52%
No	14	48%

Table 3.3 Preference for AI Menu System

Table 3.4 reveals opinions on the necessity of installing tablets at each table for customers to order their food with 62% of the respondents not seeing the need for such technology, indicating a preference for traditional or alternative ordering methods over this specific technological solution. Therefore, this assumption is erroneous.

Question: Do you need a tablet to be installed at every table for customers to order their food?		
Answer	Amount	Percentage
Yes	11	38%
No	18	62%

Table 3.4 Tablet Ordering Necessity

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As the interview progressed, restaurant owners had a very divided opinion whereby 48% of the respondents were uncertain of the need for AI, while 28% did not see any necessity in implementing AI, with only 24% affirming that AI could be beneficial for streamlining their processes. This assumption cannot be validated.

Question: Do you need to streamline your business with the help of AI?		
Answer	Amount	Percentage
Yes	7	24%
No	8	28%
Not Sure	14	48%

Table 3.5 AI Streamlining Support

Apart from understanding the necessities of an AI Drag-n-Drop Menu system, we have embarked on a journey to find out other restaurant operations' competitive edge and pain points. Table 3.6 showcases that most interviewed restaurants centered their competitive edge on quality and freshness with both equally prioritized by 19 respondents. Speed is also a significant factor among the 13 restauranteurs respondents.

Question: What are the value propositions of your restaurants to your customers?	
Answer	Amount
Quality	19
Fresh	19
Speed	13
Affordability	9
Authentic home-country food (Thai/Taiwanese/Chinese/Japanese)	9
3rd Avenue (for people to meet and hangout)	7

Table 3.6 Restaurant Value Propositions

As we dwelled further, we have identified the main challenges encountered in managing a restaurant. The unpredictable crowd is the top concern, cited by 17 participants, reflecting the difficulty in forecasting customer turnout. Unpredictable weather and inflation increasing food prices are also significant stressors, each noted by 12 and 11 respondents, respectively. Finding staff and the specific demands for seasonal menus during festive times are challenges for 4 respondents each. Inflation causing a decrease in patronage, rising rental costs, the demand for seasonal dishes, and the trend of working from home, which impacts eating out, are other issues highlighted, although they are of lesser concern compared to the primary challenges faced.

Question: What are the pain points in running a restaurant or restaurant?	
Answer	Amount
Unpredictable crowd	17
Unpredictable weather	12
Inflation that causes food prices to rise	11
Very hard to find staff(s)	4
Customers desire a festive season menu (during festive times)	4
Inflation that causes people to stop patronizing	3
Rental is increasing	3
Seasonal dishes	2
Working from home causes people to stop eating out	1

Table 3.7 Restaurant Operation Challenges

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In terms of the issue of wastage in restaurants, the most significant portion of respondents, at 48%, reported wastage levels below 10%. The remaining responses are scattered, with 14% not knowing their wastage levels, another 14% experiencing 10-15% wastage, and smaller fractions reporting higher wastage levels, indicating varied efficiency in resource management across different establishments. Most of them can predict the sales per day by learning from the data generated by POS or drawing upon their wealth of experience in operating restaurant(s).

Question: How much percentage of waste in your restaurants?		
Answer	Amount	Percentage
Below 10%	14	48%
10-15%	4	14%
15-20%	2	7%
20-25%	4	14%
More than 25%	1	3%
Unknown	4	14%

Table 3.8 Restaurant Waste Percentages

As we pressed further on the topic of using AI solutions to reduce wastage, most restaurant owners, 69%, showed a willingness to adopt such technology. This suggests an openness to innovative methods for minimizing waste. In contrast, 17% do not see the need for it, and 14% are undecided, which might reflect satisfaction with current practices or uncertainty about the effectiveness of AI solutions. We have a very clear picture of a solution for this target market.

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Question: Would you want to try this AI solution if we can reduce wastage for you?		
Answer	Amount	Percentage
Yes	20	69%
No	5	17%
Not Sure	4	14%

Table 3.9 AI Waste Reduction Interest

As we continue to question from another angle of increasing profitability of their restaurant via AI solution, a substantial majority of respondents, 69%, were open to the idea, reflecting a significant interest in leveraging technology for financial gain. A smaller group, 17%, were unsure about implementing such a solution, suggesting some hesitation or need for additional information, while 14% did not believe they would benefit from such an AI solution.

Question: Would you want to try this AI solution if we can increase the profitability of your restaurant(s)?		
Answer	Amount	Percentage
Yes	20	69%
No	4	14%
Not Sure	5	17%

Table 3.10 AI for Profitability Interest

When asked about the necessity to predict customer visitation daily, 62% of the respondents felt it was necessary, indicating a strong interest in tools for forecasting customer flow. Conversely, 28% did not see a need for this prediction, and 10% were uncertain, showing that not all operators feel the need for precise forecasting or may rely on other methods to manage customer flow.

Question: Do you need to predict how many customers will visit your shop per day?		
Type	Amount	Percentage
Yes	18	62%
No	8	28%
Not sure	3	10%

Table 3.11 Customer Flow Prediction Need

As we inquired further if there was a need for an AI system to provide insights into customers' preferred menu items. The opinions were split, with 38% acknowledging the need for such a system to tailor their menu offerings, while an equal proportion of 31% either did not see the need or were unsure about the benefits of this technology. This reflects a diverse perspective on the role of AI in menu optimization and customer satisfaction.

Question: Do you need an AI system to feed you with customers' preferred menu?		
Type	Amount	Percentage
Yes	11	38%
No	9	31%
Not sure	9	31%

Table 3.12 AI Menu Preference System

Table 3.13 results illustrate the digital presence of the restaurants in the social media landscape. Instagram appears to be the most utilized platform with 17 mentions, followed closely by Facebook at 14. WeChat shows some usage with 3 mentions, and a single respondent indicated the use of delivery service platforms like Uber or Doordash for their social media presence. However, 6 respondents reported not having any social media presence, suggesting a gap in the digital footprint of some businesses.

Question: Do you have any social media presence?	
Type	Amount
Instagram	17
Facebook	14
WeChat	3
Uber/DoorDash	1
None	6

Table 3.13 Social Media Presence Overview

As for the frequency of social media engagements, opinions are varied. A quarter of the respondents feel the need for daily updates, demonstrating a commitment to constant engagement with their audience. Weekly updates are also popular, with 21% of the vote, and monthly updates are equally favored. Nonetheless, a significant 34% are not sure about how often they should be present on social media, indicating some uncertainty or lack of strategy in their digital marketing efforts.

Question: How much social media presence do you need?		
Type	Amount	Percentage
Daily	7	24%
Weekly	6	21%
Monthly	6	21%
Not sure	10	34%

Table 3.14 Social Media Update Frequency

In conclusion, we can validate some of our assumptions as follows:

- Restauranteurs want to reduce wastage
- Restauranteurs want to increase profit
- They are keen on the system if can predict crowd
- Restauranteurs need a social media presence

Because restaurants serve quality & freshly cooked meals, they need to predict the crowd so that wastage can be reduced; hence, increasing profit. On top of that, many restauranteurs believe that social media can increase customers.

3.2 Empathy Map

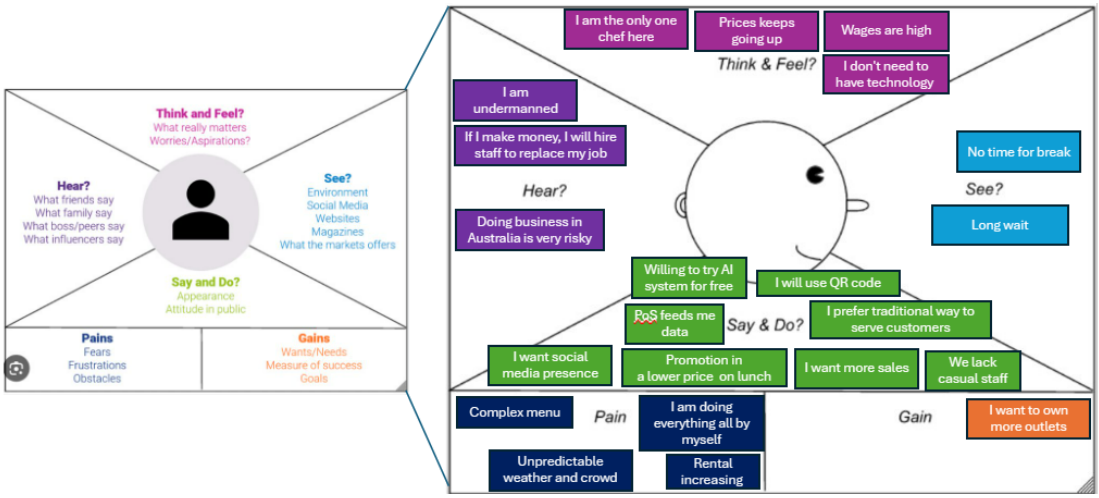

Figure 3.0 Empathy Map

Through our conversations with various restaurant owners, they feel overwhelmed by the responsibility of managing every aspect of their business, including dealing with high costs and the challenge of finding reliable staff. They had received negative opinions about opening their restaurants from their close families or friends. These negative opinions include the risks to enterprise one business in Australia, restaurants in which owners find it hard to make big profits and cannot hire staff. Many struggle with the workload, from creating products to managing finances. However, they recognize the importance of social media in boosting sales and are eager to use platforms like Instagram and Facebook to promote their offerings. The main pain point is the strain of running the business solo, leading to pressure to fulfill customer orders without assistance. Despite these challenges, owners aim to enhance their establishment to attract more customers and create a welcoming atmosphere for increased sales.

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4.0 Solution #1 – AI Predictive Model

Based on the interview analysis, Team AKA1 has developed the first solution: a predictive tool to estimate customers' visitation and account for weather conditions. This enables restaurateurs to optimize food preparation, significantly reducing wastage.

In today's business landscape, the focus has shifted from simply maximizing profit margins to providing value to users. Therefore, having a value proposition canvas can effectively define the product-market fit of our offering.

4.1 Value Proposition

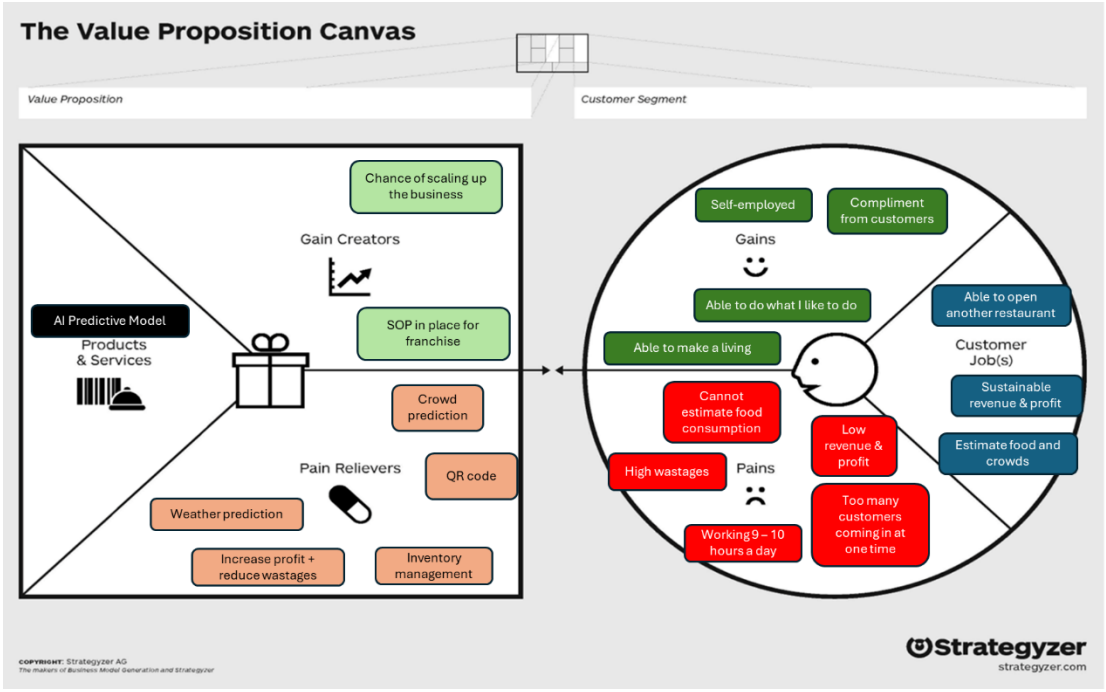

Figure 4.0: Value Pro position Canvas for AI Predictive Model

Based on the value proposition canvas, ideation must start from the jobs to be done by restauranteurs. The interviews provided us with plenty of insights into that restauranteurs want to scale up their business which provide stable income. Estimating the amount of food to be prepared to cater to the crowd so as not to overprepare the food that leads to high wastage.

Restauranteurs take a lot of pride in their business because of the compliments received from customers as well as being self-employed in the industry that they are so passionate about.

Having said that restaurant owners often encounter several challenges in their ventures, including low revenues, low profit margins, long working hours, shortage of staff during peak times, and high wastage due to difficulty in estimating the number of customers visiting per day.

Therefore, it is crucial to offer restaurant owners an AI Predictive Model as the core of their operations. This model follows a systemic Standard Operating Procedure (SOP), using data from weather forecasts and other systems that the restaurants have been operating from to generate meaningful analysis such as to predict crowds. Knowing how many customers to expect each day helps owners plan their inventory orders, reducing waste in turn producing a better-than-expected profit. With higher profits, they can hire more staff, freeing up restaurant owners' time to scale up their operations and outlets is made possible. Additionally, having data-driven insights enables better decision-making in delivering goods and services based on data generated especially in the area of better menus generated from customer preferences.

Restaurants experience a surge in customer visitation during peak hours, including breakfast, lunch, and dinner. Deploying a QR Code ordering system has emerged as a popular strategy for managing overcrowded customer flow. Therefore, partnering with a QR Code system enables AKA Studio to leverage its existing clientele to cross-sell this end-to-end solution.

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4.2 First Customer Archetype

Based on the results of the data collection and the sentiment analysis of the data collection subjects, this report provides a simulated persona describing the likely users of the product of solution 1 (Table 4.1).

Our potential first archetype customer is Asian Chen Restaurant; speed is everything in their business model. As such, the ability to predict customers' visitation, food preparation for the day, and reduce wastage becomes crucial to his everyday business.

Profile	• This restaurant serves mainly Cantonese food • Modified for Chinese and local tastes • Despite the limited number of shops and staff, the food is served quickly and cheaply, providing a good choice for those who want to eat fast food
Demographics	• Food Type: Cantonese Food • Service Type: Full Service • Customer Type: People who love a quick Chinese meal
Feelings	• Pains: Rising rent and raw materials price • Gains: Having my restaurant • Jobs need to be done: How much food to prepare per day? Need to reduce wastage
Techno-graphics	• Tech-system: POS • Favourite device: POS • Social Media Blast: Instagram • Attitude to tech: Must adopt to increase sales
Life Goals	• Short Term: Control cost • Medium Term: Receive more orders

Table 4.1 An Asian Restaurant Persona

4.3 Business Model Canvas

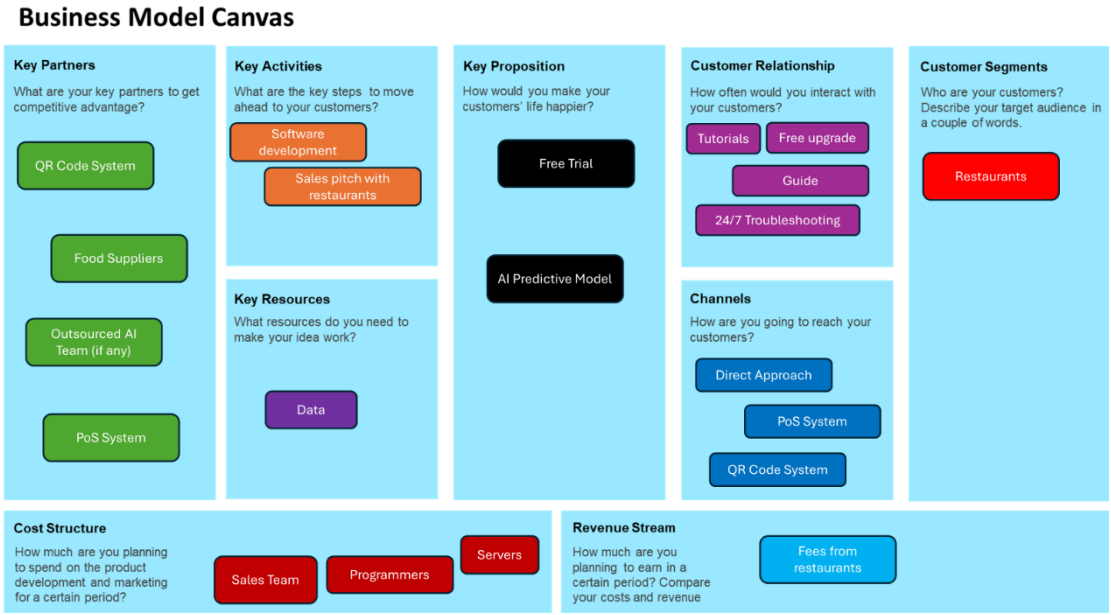


Figure 4.1: Business Model Canvas for AI Predictive Model

Key Partners

Generally, hiring skilled programmers to implement cutting-edge technologies, especially in AI, can be extremely challenging as AI talents are often considered "unicorns". Outsourcing to top artificial intelligence companies could be a more viable option, as they typically have access to a pool of ready talents and are supported by cloud server providers such as Oracle or Amazon Web Services (AWS), ensuring robust and scalable infrastructure support.

To facilitate the increased adoption of this solution, it is imperative to establish partnerships with POS and QR Code systems, integrating APIs into their systems for data extraction. Additionally, leveraging their existing clientele can help expand your customer base.

Part of the integration is the food supplier. The AI Predictive Model could alert suppliers to deliver rather than managing it weekly.

Key Activities

The platform’s development revolves around several key activities. Continuous software development ensures regular updates and improvements to remain competitive against any new entrants offering better AI solutions. Additionally, ongoing efforts in marketing and sales must be prioritized. Capturing restaurants and “owing” them is crucial for the company’s growth in the view that switching costs can deter them from moving to competitors in the future.

Another key activity is to collaborate with food suppliers to integrate inventory monitoring capabilities that enable seamless management of ingredient procurement and stock levels.

Key Proposition

Distinctive key propositions differentiate the platform from others. It serves as a one-stop center for predicting weather and customer visitation, enabling accurate food preparation and increasing profits by minimizing waste. Additionally, restaurateurs can leverage the system from menu creation, utilizing customizable templates and layouts supported by an intuitive interface and rigorous user testing.

The Inventory Monitor feature enables real-time tracking and management of inventory levels, integrating predictive analytics to streamline replenishment automatically.

Tools for Visually Analyzing menu performance and trends offer customizable reports for informed decision-making.

Key Resources

This system is data-driven, which means data is the system's only key resource. Predictive modeling always requires massively comprehensive datasets to produce meaningful analysis such as sales data and customers' preferred menu items which are crucial for powering AI algorithms and optimizing profit.

Customer Relationship

To foster a positive customer relationship, extensive self-service resources including tutorials and guides help users familiarize themselves with the features. Customer support teams are also readily available on a 24/7 basis to help and troubleshoot issues through multiple channels including email, chat, and phone.

Channels

A direct approach with sales teams actively reaching out to potential customers is the only way at inception. Furthermore, collaborations with POS and QR Code Systems can enhance market reach and restauranteur acquisition.

Customer Segments

The main customer segments include small to medium-sized restaurants, cafes, and bars, which benefit most from the comprehensive suite of features.

Cost Structure

The cost structure includes development costs such as salaries/outsource team(s), software licenses, and infrastructure maintenance. Marketing expenses encompass advertising, promotions, and sales commissions. Additionally, customer support incurs costs related to staff salaries, training, and support tools.

Revenue Stream

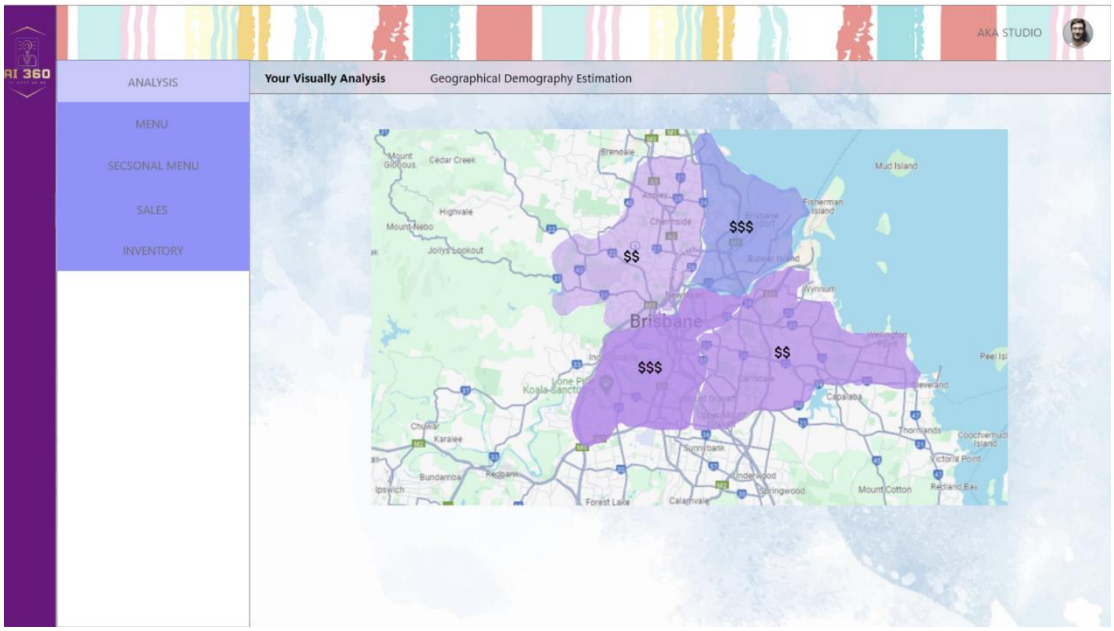
Revenue streams are diversified to maximize profitability. An operational model based on subscription charges monthly or yearly fees for access to the features. Premium features for additional charges cater to customers seeking advanced functionalities or customization options.

4.4 Solution

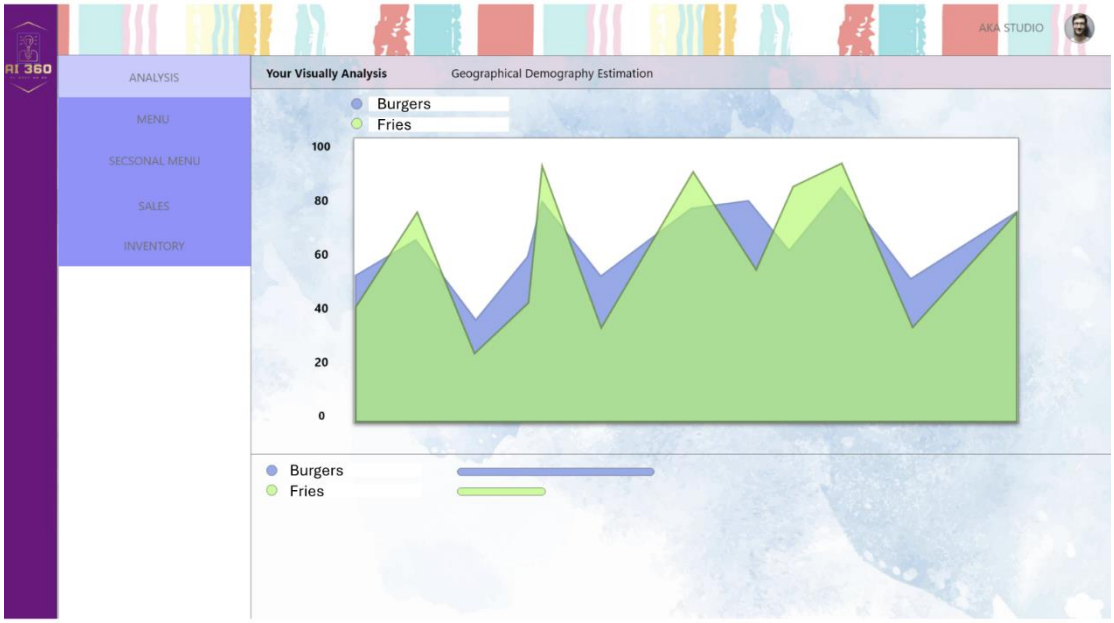
AI Predictive Model is a robust SaaS solution tailored to equip restaurant owners with state-of-the-art technology. This platform enables small businesses to automatically create menus and manage inventories based on crowd and weather predictive models generated from complex algorithms.

The actionable insights, automated data analysis, and smooth integration transform the operational dynamics of restaurants, making management tasks more efficient and less time-consuming.

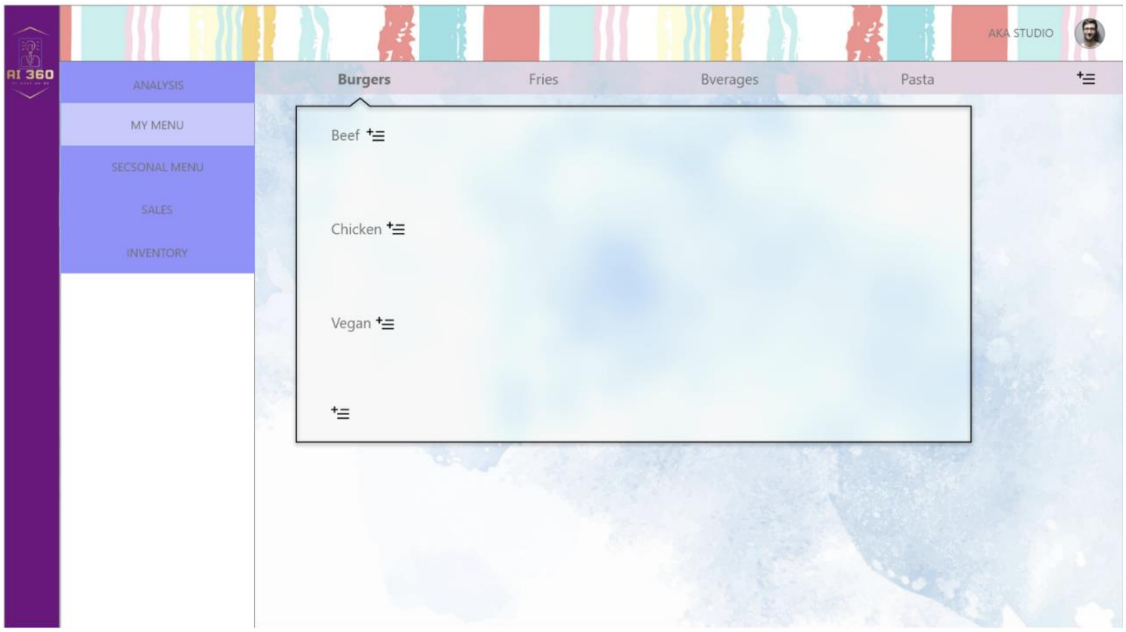
Prototype & Explanation



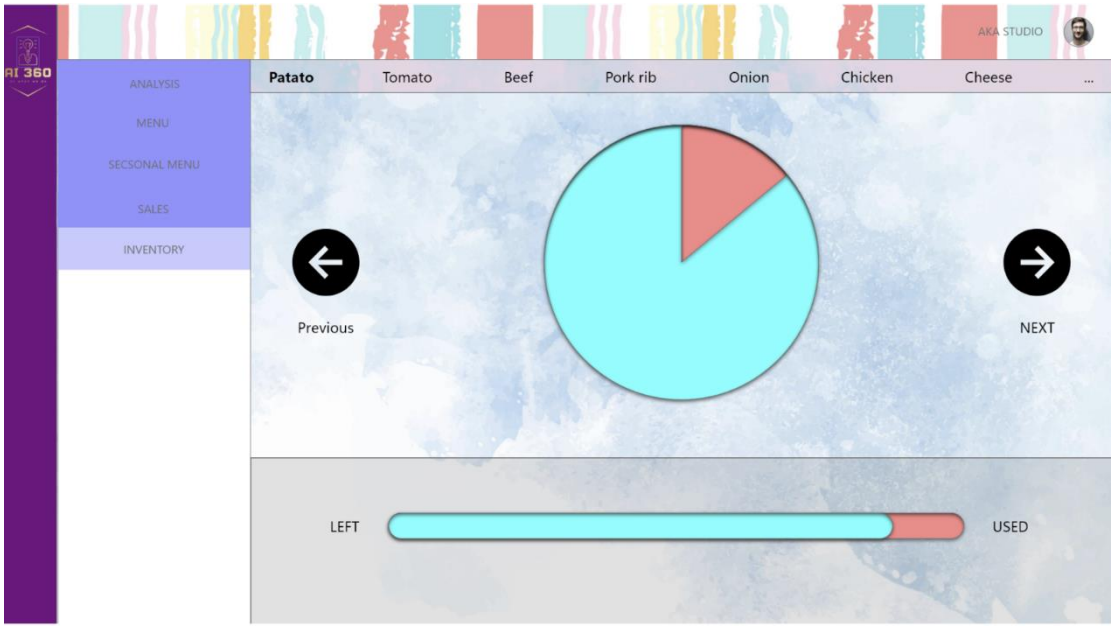
An analysis displaying the surrounding neighborhood's spending power in your restaurants. Should the system capture more data, the AI will be trained to be more comprehensive over a long period; thus, generating much more accuracy for restaurant use.



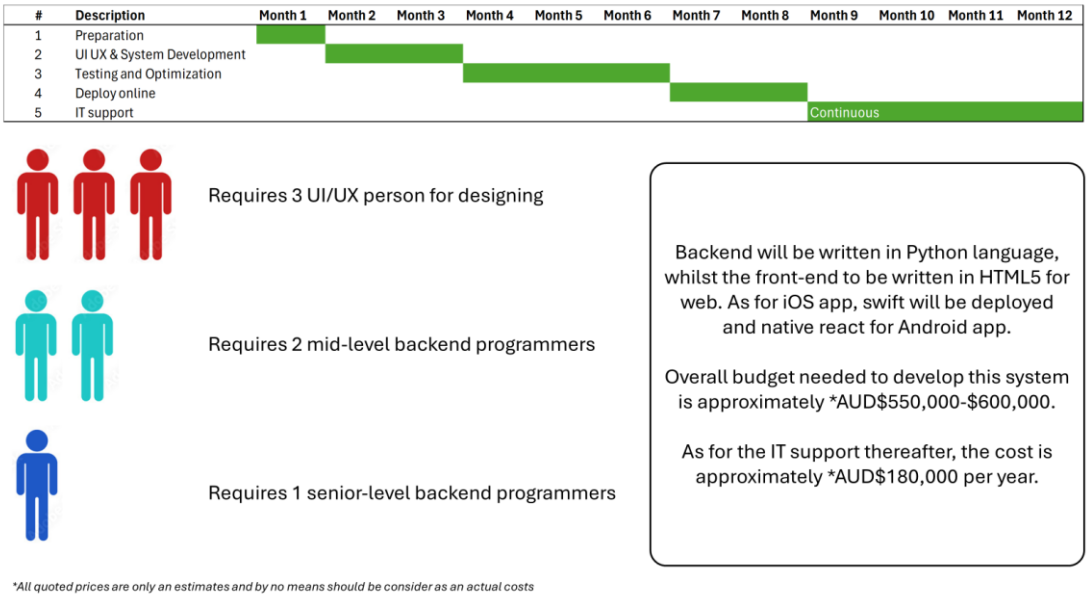
On top of that, the system would be able to generate graphs depicting sellable products on the analysis dashboard so that restauranteurs can stay focused on the sellable menu and reduce non-sellable items from the menu. Restauranteurs can rely on the analysis tool to test out new menus.



A summary of real-time data of the sellable menu would be displayed to inform restauranteurs. Restauranteurs can decide to work on set meals based on data.



Based on all the analysis generated in the system, inventory management can automatically replenish the stocks without the involvement of human interactions.



#	Description	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
1	Preparation												
2	UI UX & System Development												
3	Testing and Optimization												
4	Deploy online												
5	IT support									Continuous			

Due to the system's complexity, it would require 8 months to develop the system with a budget of about AUD$550,000 – 600,000. A team of 6 people consists of 3 backend programmers and 3 user interface designers.

Phase I: Requirement Analysis

During the initial phase of the project, the team gathers and analyzes requirements. Software engineers are integral to these discussions, providing technical evaluations and suggestions based on their expertise. Concurrently, UI/UX designers focus on improving interface design and interaction processes according to these requirements. This phase is critical for setting a foundation that aligns technical capabilities with user expectations.

Phase II: Design and Development

This phase is split into key development stages:

System Design and Architecture

The technical leader, alongside software engineers, undertakes the planning and execution of system design and architecture. This involves determining the technical realization plan, which is vital for guiding subsequent development efforts. UI/UX designers also refine the interface design and user experience during this stage, ensuring that the aesthetic and functional aspects of the system are harmonized with the architectural framework. The project manager plays a crucial role in supervising and coordinating these efforts, ensuring consistency with the initial requirements.

Front-end Development

Front-end engineers begin their work by implementing the user interface as per the UI design and requirement documents. UI/UX designers collaborate closely with them, providing design support and making necessary adjustments to optimize interactivity and visual appeal.

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Back-end Development

Back-end engineers focus on developing the system functions and logic based on the system design and requirement documents. Simultaneously, the database administrator designs and constructs the database structure and collaborates with back-end engineers to ensure seamless integration.

Phase III: Testing and Optimization (October - December)

After the development phases, testing and optimization are conducted:

Unit Testing and Integration Testing

The development team conducts unit and integration testing to ensure all parts of the system function correctly. The Quality Assurance team prepares test plans and cases, executes these tests, and documents any issues found, which are crucial for refining the system.

System Optimization and Debugging

Based on the test results, the development team optimizes system performance and stability, addressing any issues identified. UI/UX designers adjust and optimize the interface based on user feedback to ensure usability and satisfaction.

Phase IV: Deployment and Release (December - November)

This phase ensures the system is ready for live environment operation:

Deployment Preparation

The development team performs final system checks and prepares the environment and configurations needed for deployment. The operation and maintenance team plans the deployment process, preparing the server and network environments.

Deployment and Release

The operation and maintenance team deploys the system to the production environment following the deployment plan and conducts final testing. The development team oversees the deployment process and resolves any emerging issues. The project manager coordinates the release and liaises with the client to ensure a smooth transition.

Phase V: Maintenance and Support (Future Action)

Post-deployment, the focus shifts to maintenance and ongoing support:

Ongoing Maintenance and Updates

The development team continuously monitors the system's operation, addressing and repairing any issues promptly. They also update the system and optimize functions based on user feedback to adapt to evolving needs.

Technical Support and Customer Service

The technical team provides enduring support, answering user inquiries and responding to feedback. They maintain open communication with customers, collecting requirements and suggestions to inform future enhancements.

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5.0 Production Development

Our 2nd proposed solution is derived from a combination of our survey feedback and insights gathered from conversations with restaurant owners, as outlined in the empathy map. Restaurant owners express a desire to enhance their social media content management to increase awareness. Despite their established presence in the delivery scene, they aim to increase their dine-in sales.

Creating values for the restaurant owners should be the emphasis for this proposal as restaurants have a limited budget for social media presence.

5.1 Value Proposition

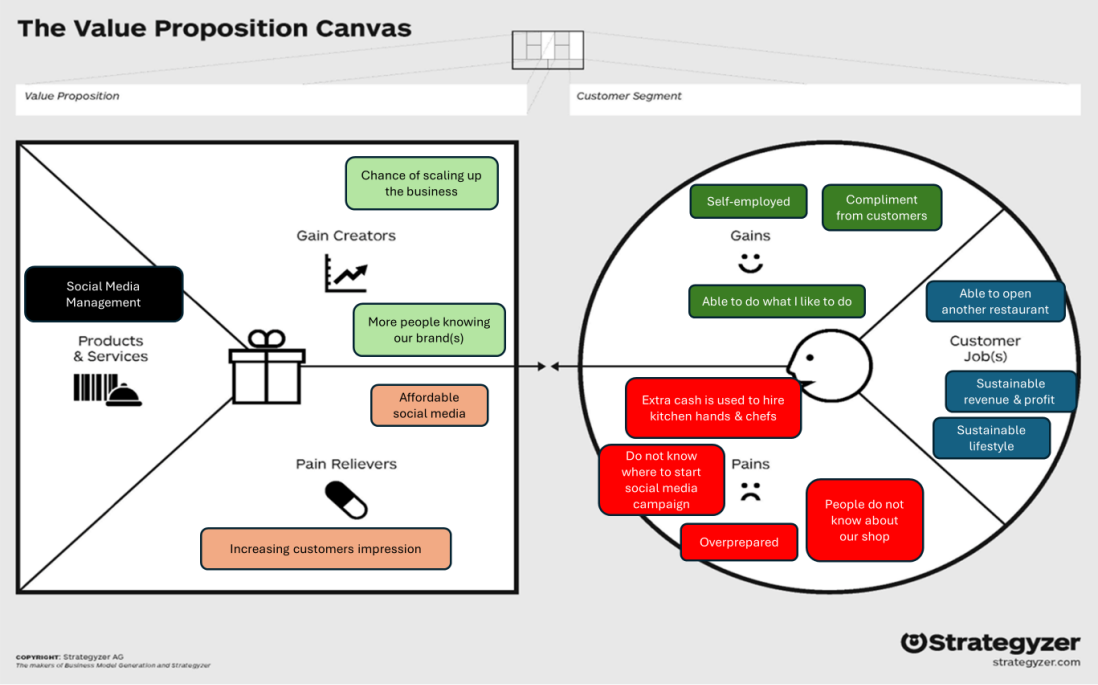

Figure 5.0: Value Proposition Canvas for AI Social Media Management Tool

Despite the value proposition canvas being similar to solution 1 with the same jobs to be done by restauranteurs and gains, the pains are very different.

Many of the owners already have a social media presence without any knowledge of running a proper social media campaign failing to create any desired outcome.

Also, they are running a very tight budget for social media campaigns as any extra cash or profit would be used to hire an extra pair of hands to ease their workload in the kitchen or waiting on customers.

Without any social media experience, restaurant owners who had run promotional advertisements on social media would expect customers to flock in; as a result, restaurants overprepared their food but may not get the crowd that they have been expecting.

As such, providing comprehensive AI-powered social media management tools with built-in data visualization, feedback collection, and content generation would greatly benefit restaurant owners seeking a strong social media presence with minimal effort. AI systems can be used to generate high-quality content and automatically distribute it across various social media platforms, generating buzz. Subsequently, owners can plan strategically based on customer impressions, clicks, comments, and likes. The goal of this AI system is to increase impressions among potential customers and reduce unnecessary clicks, ultimately saving restaurant owners' budgets while achieving their set targets.

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5.2 First Customer Archetype

Based on the results from data collection and sentiment analysis, the following persona templates are your potential first customers as depicted in Table 5.1 & Table 5.2.

ABC Restaurant is a restaurant that takes pride in serving up great Australian dishes coupled with a great ambiance that gives the vibe. It is certainly a place to be on a Friday night.

Profile	• Australian restaurant • Moderately priced and offers a full range of services to their customers • They pride themselves on having a great selection of food, highly recommended chilled drinks on a hot Brisbane summer day, and great coffee in the winter
Demographics	• Food Type: Australian Food • Service Type: Full Service • Customer Type: Like to enjoy great food with great company. Able to talk for long hours
Feelings	• Pains: Need more crowd • Gains: Doing what I like to do • Jobs need to be done: Need to make much more per day
Techno-graphics	• Tech-system: PoS, QR Code • Favourite device: PoS • Social Media Blast: Instagram, Facebook • Attitude to tech: Must adopt to increase sales
Life Goals	• Short Term: Turnaround the business to be profitable • Medium Term: Increase profitability • Long Term: Able to scale the business

Table 5.1 An Australian Restaurant Persona

O’Brien Restaurant serves your typical everyday Western staple food that relies on speed and affordability to generate crowds. Yet, social media campaigns have fallen short of expectations, and need for more brand awareness.

Profile	• A Western restaurant with great prices and a great location • It is mainly geared towards working people • It needs to hire more people to do the cooking and get the neighborhood to know the place
Demographics	• Food Type: Western Food • Service Type: Self Service • Customer Type: Affordable takeaways for the whole family
Feelings	• Pains: I am the only person working here • Gains: Compliment from customers • Jobs need to be done: Need social media to get more customers
Techno-graphics	• Tech-system: PoS • Favourite device: PoS • Social Media Blast: - nil - • Attitude to tech: - nil -
Life Goals	• Short Term: Social media blast • Medium Term: Hiring more people to assist the business • Long Term: Able to open another 2 more outlets

Table 5.2 A Western Restaurant Persona

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5.3 Business Model Canvas

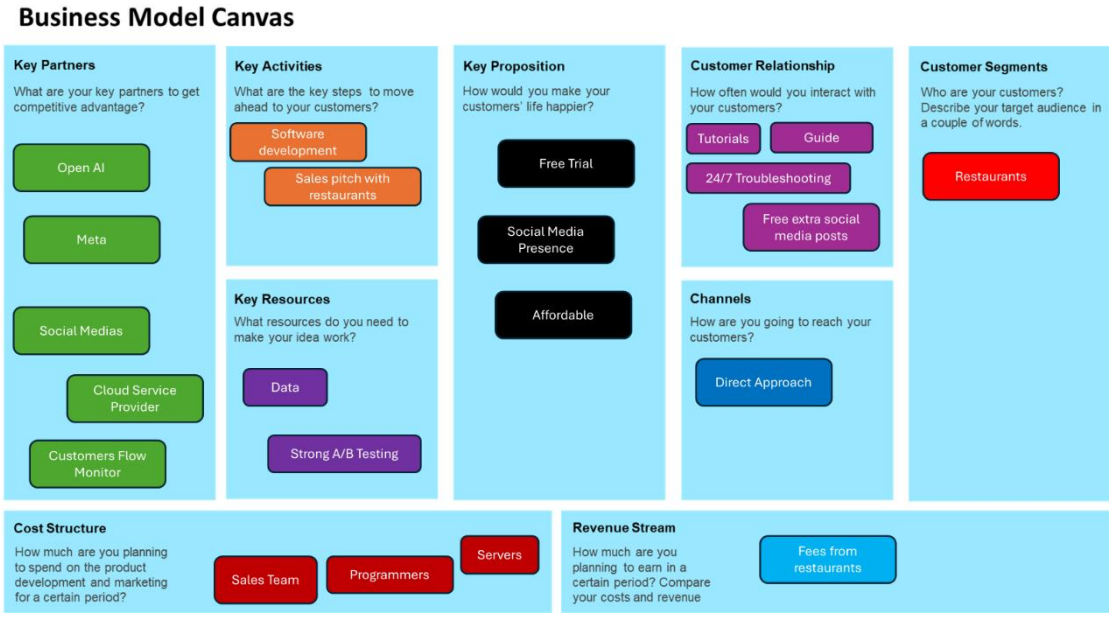

Figure 5.1: Business Model Canvas for AI Social Media Management Tool

Key Partners

This category is divided into four categories:

- **AI-Generate Content Provider**: OpenAI or Google, which owns the AI-driven chatbot or image-generator, such as ChatGPT or Bard.
- **Social Platforms**: The platforms are led by Facebook, TikTok, X and Instagram.
- **Cloud Server Providers**: The Mendix Cloud from App design tool or any other external server providers including AWS, Oracle, or Microsoft.
- **Customer Flow Monitor**: An equipment or application to monitor daily customer flow, and then send feedback to restaurant owners.

Key Activities

Emerging new technology can always dethrone you as the main system provider. Therefore, regular software development and feature adding are necessary to deter any threats from new start-ups. Acquiring new clientele through marketing and sales is a must to scale up the business, especially in the digital advertising market where competition is stiff.

Key Proposition

The selling point for this system consists of three (3) categories:

- **Integration:** API into OpenAI for generating text, images, and soon-to-be-available videos for promotional materials
- **Visualization:** API into social media for real-time analytics and feedback loops
- **Affordability:** Generating impressions to create buzz without clicks

Key Resources:

Based on the data received via impressions, clicks, comments, and likes, advertisements and promotions can easily be created for A/B testing to capture the audience's eyeballs.

Customers Relationship

For customer relationships to be considered effective and efficient, a helpful and comprehensive tutorial on using this social media management tool should be provided to users. Not to mention, reliable and timely assistance through emailing, calling, and chatting should be implemented on a 24/7 basis.

Channels

A direct approach from the sales team to restaurant owners is seen as the most economical way. Also, direct marketing can reduce ineffective online marketing targeting restaurant owners.

Customer Segments

Small to medium-sized restaurants, cafes, and bars, need affordable social media presence.

Cost Structure

The cost structure includes developing the tool to satisfy the requirements of launching the app to the public, the support from programmers to ensure the system operates at an optimum level consistently, and the cost of the sales team that is responsible for approaching potential customers.

Revenue Stream

Charging a percentage (%) from restauranteurs based on their monthly or yearly budget committed to reaching out to the audiences.

5.4 Solution

The AI Social Media Management, developed using the low-code app design platform Mendix, is tailored for restaurant owners seeking more attention on different social platforms by posting impressive promotions. In this solution, restaurant owners could connect to their multiple social platforms simultaneously, and then the likes and comments with their postings would be collected, stored, and rearranged to be datasets daily. Moreover, the daily customer flow would be recorded, and the postings to different social platforms would not be generated by the owners themselves, which are generated by AI. A draft of AI Social Media Management is shown below:

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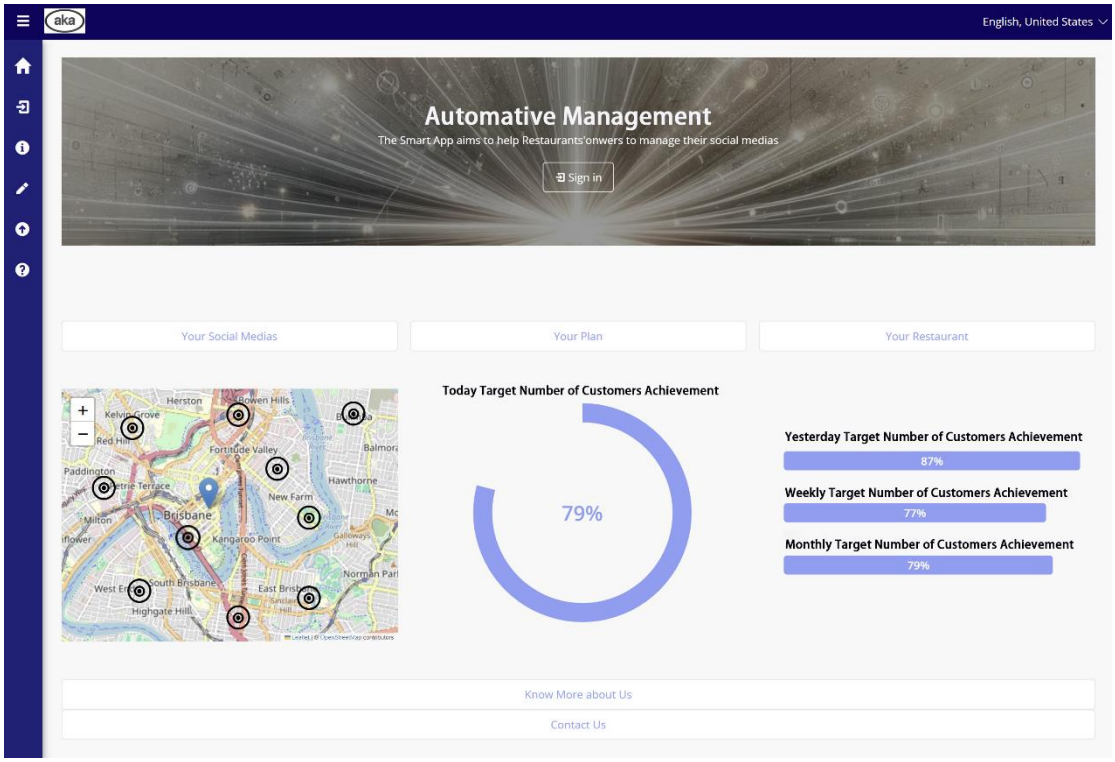
• Home Page



On the home page, a real-time map is created to provide owners with the information that is collected from the deliveries that customers have ordered, namely, by browsing the map, owners would be provided with the approximate destinations of those deliveries. Besides, two progress graphs are placed next to the map, one progress circle to reveal the completion rate of intraday customer flow which is compared to the goal that owners desire to achieve. Another three progress bars show the completion rates of customer flow yesterday, weekly, and monthly. The three buttons above the map and progress graphs represent the page of Visualisation, owners' subscription plan, and the profile of their restaurants that they registered to use this management tool respectively.

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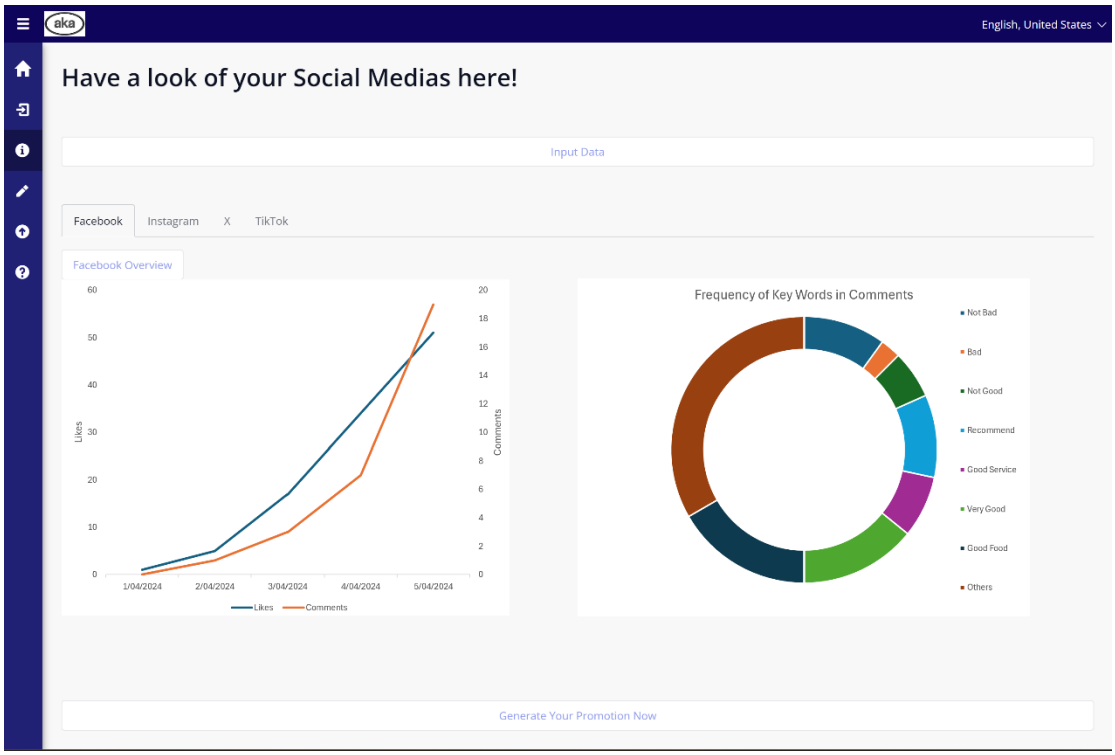
• Feedback/ Visualisation



On this page, a two Y-axis line plot would illustrate the trends of the daily numbers of likes and comments with the date as an X-axis, then the role of this management tool or if this tool has promoted the attention would be reflected. The other chart is a pie chart, the data source of the pie chart is the frequency of the keywords which is calculated from the detection of those keywords in the comments, such as ‘Good’, ‘Recommend’, and ‘Bad’. In addition, there is a button that the name of that is ended with the “Overview”, owners could have overviews of the data in the form of tables of all social platforms. The full-size button at the bottom of the page could jump to the page for generating promotions.

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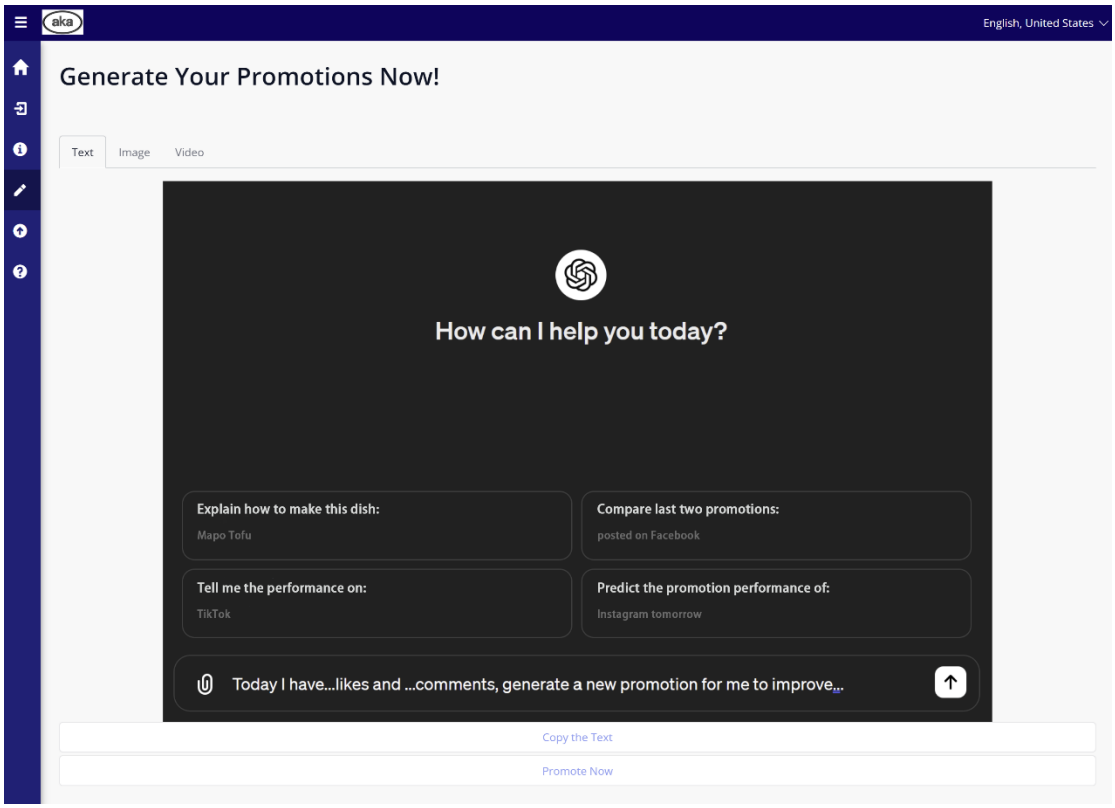
• Content Generator



This social media management tool is mainly driven by this page – AI Promotions Generator, which is supported by ChatGPT from OpenAI, in this page, OpenAI provides the content generators including impressive text, image, and video content. In addition, the ChatGPT can answer the owners' questions, for instance, sometimes, the chef in the restaurant may not be familiar with the specific requirements of food from customers, so this AI now can help to figure out if there is something allergic or not. After the content has been generated, there are two buttons at the bottom of the page to copy and post to all social media.

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The development period and estimations are below:

Phase I. Preparation and Pre-estimation

- Clear roles and responsibilities, one UI/UX designer, and three backend programmers are expected to develop and provide continuous support. In such a team structure, the UI/UX designer would be dedicated to drawing and researching the most appropriate design for users, two of those three programmers are responsible for realizing the UI drawn by the designer by using Mendix, and the other one programmer would be asked to update and support continuously. The 4-member team structure is estimated to take 6 months to complete all the development and launch, therefore the cost is reckoned to be around $275000 in the whole 6 months and $120000 per year for customer support thereafter.

Phase II. Setup and Development

- Design the App: Use the drag-and-drop interface to design the app. This includes setting up the user interface, defining the logic, configuring data models; utilize the widgets and modules available in the Mendix Marketplace to enhance the app's functionality.

Phase III. Development and Testing

- Configure Data Integration: Set up integrations with external databases, APIs, and services to allow the app to interact with external data sources.
- Test the App Locally: Use the built-in functionality in Mendix Studio Pro to test the app. This can be done by running the app locally and using test scenarios to simulate user interaction.

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Phase IV. Deployment to the Cloud

- Choose a Deployment Environment: Mendix offers various options, including Mendix Cloud, private clouds, and on-premises servers. Programmers should choose the one that best suits their needs.
- Deploy the App: From Mendix Studio Pro, programmers can deploy the app directly to the Mendix Cloud, which is a testing, acceptance, or production environment.

Phase V. Testing in the Cloud

- Perform User Acceptance Testing (UAT): Test the app in the environment it will operate in, typically in the acceptance or staging environments. Gather feedback from users and make necessary adjustments.
- Ensure Scalability and Performance: Test the app under expected load conditions to ensure it performs well with multiple users and under potential stress.

Phase VI. Launch and Customer Support

- Launch the App: Once testing is complete and the app meets all requirements, launch it by moving it to the production environment. This is done with a few clicks within Mendix Studio Pro.
- Monitor and Update: After launching, continuously monitor the app's performance and gather user feedback. Use this information to make further enhancements and updates.
- Manage and Iterate: Regularly update the app with new features and improvements to cater to users' preferences.

6.0 Conclusion

In conclusion, based on the results of market research and data analysis, this report proposes two possible solutions. Option 1 is AI Predictive Model; Option 2 is AI Social Media Management.

Option 1 connects data to PoS, QR code systems, and Menu Management systems using Application Programming Interface (API). It offers comprehensive benefits such as determining neighboring suburbs' spending power, predicting crowd behavior for optimized profits, efficient inventory management, and gaining more understanding regarding sellable products. It costs $550,000 to $600,000 to develop and $18,000 for annual maintenance. Conversely. Option 2 presents a focused approach to social media management with comparatively lower development and maintenance costs than Option 1. It leverages AI for content creation and engagement. It helps users post messages on various social media, create impressions, and check the feedback loop from comments. It costs $275,000 to $280,000 to develop and $18,000 for annual maintenance.

This report also provides a SWOT analysis of the product and aims to assess the strengths, weaknesses, opportunities, and threats of AKA Studio in this project. Analyzing existing resources and the market environment helps AKA Studio understand its position in the industry and formulate corresponding strategies. The strengths and opportunities highlight AKA Studio's potential in AI technology, customer resources, and market growth, while the weaknesses and threats point out the challenges to be addressed, such as data acquisition and competitive pressure.

- Strengths

In the space: AKA Studio can leverage AI to further enhance its social media management.

Existing Customers: AKA already has initial data on 30 restaurants, so the studio can tap into existing clients with an AI Predictive Model system.

- Weakness

Data-driven: More restaurant research and different types of data are needed to complete the entire project. AKA Studio needs data from restaurants, PoS Systems, QR code systems, Menu management systems, and market surveys.

- Opportunities

Growing Demand: A surge in population (2.6% growth in 2023) and migration leads to more new restaurants. Customer tastes become varied and predictive models will be favored by object owners.

Investment Brisbane Olympics: The 2032 Brisbane Olympics could potentially create a ripple effect on the night scene, especially in restaurants and bars. They are our potential future customers. In addition, the Olympics will even draw the attention of potential investors to our software.

- Threats

Peer Competition: 115 digital companies in Brisbane have business in social media advertising, which could be potential competitors.

New Technology: A new AI company will be developing a similar AI system to predict crowds, increase profit, and reduce wastage. Our software is so dependent on AI technology that we must partner with AI companies, even profit sharing.

According to the SWOT analysis, prioritizing Option 2 helps to maximize immediate returns, while Option 1 can serve as an additional service for the future. This strategic approach ensures a balanced use of resources and provides the basis for scalable growth and adaptation to changing market dynamics.

Appendix 1-Questionnaire

Cuisine Type: _____

Style: Full Service / Self-Service/ Fine Dine / Bar

Questions – AI System to manage restaurants (you may give more than 1 answer)

1. What are the value propositions of your restaurants to your customers?

a. Speed

b. Affordability

c. Quality

d. Fresh

e. 3rd Avenue (for people to meet and hangout)

f. Authentic home-country food (Thai/Taiwanese/Chinese/Japanese)

2. What are the pain points in running a restaurant or restaurant?

a. Unpredictable crowd

b. Unpredictable weather

c. Customers desire a festive season menu (during festive times)

d. Seasonal dishes

e. Inflation that causes food prices to rise

f. Inflation that causes people to stop patronizing

g. Work from home that causes people to stop eating out

h. Very hard to find staff(s)

i. Rental is increasing

j. Others: _____

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3. Do you need a tablet to be installed at every table for customers to order their food?

a. Yes, because customers no longer need to queue to purchase

b. Yes, streamlining my ordering system

c. Yes, I don't need to hire staff

d. No, I do not need it

e. Others: _____

4. Do you need an AI system that is app-based on-screen for customers to drag-n-drop menu, in which you can then tell what your customers' preferences are?

a. Yes, that would tell me what my customers want

b. Yes, that would help me to manage the number of items on my menu

c. Yes, that would help me in managing my inventory

d. No, I do not need it

e. Others: _____

5. Do you need an AI backend system to create a menu that is appealing to customers?

a. Yes, that would tell me what my customers want

b. Yes, that would help me to reduce the items on my menu

c. Yes, that would help me in managing my inventory

d. No, I do not need it

e. Others: _____

6. Do you need to streamline your business with the help of AI?

a. Yes, AI can help me in managing inventory for customers

b. No, I do not need it now

c. I am not sure if AI would help

d. Others: _____

7. How much percentage of waste in your restaurants?

a. Below 10%

b. 10-15%

c. 15-20%

d. 20-25%

e. More than 25%

f. Others: _____

8. Would you want to try this AI solution if we can reduce wastage for you?

a. Yes

b. No

c. Others: _____

9. Would you want to try this AI solution if we can increase the profitability of your restaurant(s)?

a. Yes

b. No

c. Others: _____

10. Rank the following that your customers want / like the most.

a. Your restaurant's ambient → ___

b. Your restaurant's food → ___

c. Your restaurant's beverages → ___

d. Your restaurant's selections → ___

e. Your restaurant's locations → ___

f. Your restaurant's service → ___

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11. Do you need to predict how many customers will visit your shop per day?

a. Yes, that would help my inventory management

b. Yes, I would know how much food to prepare

c. Yes, I would know my level of revenue per day

d. Yes, it helps me in decision-making

e. No. I do not need it

f. No. I have a very stable crowd

g. I am not sure

12. Do you need an AI system to feed you with customers' preferred menu?

a. Yes, that would be great for customers

b. Yes, that would be great for us to manage their expectations

c. Yes, I know what to prepare and can reduce costs and waste

d. No. I do not need it.

e. I am not sure

13. Do you have any social media presence?

a. Facebook

b. Instagram

c. Whatsapp push promotion

14. How much social media presence do you need?

a. Daily

b. Weekly

c. Monthly

d. I am not sure

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15. How much would you pay per month for this AI System?

_____

16. Any other things you would like to have in the AI System that were not mentioned above?

_____

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