Improving End-to-End Operational Processes of Cloud Kitchens to Increase Profit: A Case Study on Lina's Kitchen

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Abstract

Cloud kitchens are non-conventional food businesses that do not offer dine-in services to its customers. In comparison to traditional food business, the setup offers higher profitability to business owners due to overall reduced costs, hence it is an advantageous model. It also has the potential to increase customer satisfaction since it can diversify the food options offered by the food industry. In the Philippines, these models are starting to grow in the hospitality industry. The subject of this study is a local cloud kitchen that has recently started – Lina's Kitchen. It has a problem of not reaching the target profit per day. The study has utilized multiple tools, such as root cause analysis and process documentation, to identify the areas of improvement of business processes. From these tools, improvements on the end-to-end process are proposed. These include dissemination of sensing surveys and purchasing of ingredients weekly, early menu posting, more cost-efficient delivery methods, and hiring manpower. The actual implementation of some recommendations shows that the target is reached. Overall, as a business that operates in the food industry, the business must have customers considered as these points for improvement are addressed by the enterprise.

Keywords
Cloud kitchens, Small-scale businesses, food industry, operations, process improvement

1. Introduction
Cloud kitchens, also known as ghost kitchens or virtual kitchens, are food delivery businesses emerging from digital innovations in the gastronomic field (Reiley 2020; Corvo et al. 2022). These deviate from the dine-in options provided by traditional food businesses, and make use of online websites and applications to take orders from customers (Upadhye and Sathe 2020). Along with these rapid technological developments are changes in consumer behavior, one of which includes the increasing preference to purchase products online, furthering the growth of cloud kitchens (Islami and Romli 2022).

This growing industry encompasses the large-scale cloud kitchens leading in the market, as well as the micro, small, and medium enterprises (MSMEs). However, there is relatively little focus and research on this sector with respect to the entirety of the food and beverage (F&B) service landscape, let alone smaller cloud kitchens. Hence, it is important to conduct studies focusing on small-scale cloud kitchens, may it be on their business models, operations, or contribution to the F&B as a whole.

This study will then focus on Lina's Kitchen, a virtual food micro-enterprise based in Pasig Greenpark Village (PGPV), Pasig City, Philippines. Their menu varies daily, offering at most five home-cooked viands, and they receive orders through a Facebook group and then directly deliver these orders to the buyer's house. However, Lina's Kitchen was not able to reach their average daily target profit of at least PHP 840.00 by having actual sales of only PHP 221.75. This study, then, seeks to determine the various operational factors that may cause this loss.

1.1 Objectives

The researchers aim to determine the potential causes for loss of profit by analyzing the business processes and subprocesses, and in turn, recommend ways to improve the system and propose an improved process flow.

2. Literature Review

2.1 Cloud Kitchen Operations

Cloud kitchen businesses come in various forms and these include but are not limited to virtual brands, shared spaces, and dedicated space cloud kitchens (Oracle 2020). These had been classified based on usage of space, real-estate and equipment, as well as branding. Virtual brand cloud kitchens use setups that allow owners to expand their cuisine to build a brand from scratch. Shared space cloud kitchens are through a leased commercial space with readily-available appliances that multiple food brands share. On the contrary, dedicated space cloud kitchens–or also known as the dark kitchen–consists only of a singular food brand with no other brands in their operating space.

From these forms, each has its own advantages and disadvantages. Virtual brand cloud kitchens have small starting costs because it has the option to utilize spaces that the owner already has, thus in the case the operations fail, there are only low risks associated. However, the caveat of the setup is it requires heavy promotion costs to get the brand known by the public. Moreover, it may also take some significant time before a successful concept is determined. Shared space cloud kitchens have little to no costs, entailing lesser risk for the business owner in case of business failure. Dedicated space cloud kitchens have the ability to alter their brand, have control over people in the space and have the opportunity to have waiting areas for customers. However, such a setup provides risks, especially for startup businesses since it has high starting costs.

Cloud kitchens provide opportunities for any aspiring business owner to start a food business from scratch. It may relieve the business from the burden of building a physical establishment to start operations and lessen start-up costs (Unilever n.d.). In general, cloud kitchens are food businesses that have most operations done online, since dine-in options are not provided to customers. Hence, the main focus of the business is solely on food production– with services centering on takeout food orders and food deliveries. In particular, most cloud kitchens utilize a hyperlocal delivery system. This system usually involves the utilization of two-wheeled vehicles in delivering food to customers in neighborhoods and areas within the vicinity of the cloud kitchen only (Sinha and Pandit 2021)

There are common steps in cloud kitchen planning and operations as found in literature (Oracle 2020; Kulshreshtha and Sharma 2022). These are shown in Figure 1. Menu is first designed to better serve the customers. In usual operations, food orders are received online through technologies, such as websites and aggregators (e.g., Grab Food, Foodpanda, etc.). The food is then prepared and cooked. Hereafter, it is either delivered to or picked up by the customer. The sales made are then accounted for at the end of the day. In comparison to costs incurred by traditional restaurant kitchens, approximately 25 percent of costs are potentially reduced from the setup–such as rental and labor costs. Furthermore, the lowering of costs can be attributed to the ability of the model to gain more profit, as it enables owners to have more jurisdiction over their orders and supplies. In general, cloud kitchens are inherently advantageous due to more versatility in their menu and branding; however, most struggle with branding and public visibility (John 2021; Oracle 2020; Susilowati et al. 2020). Nonetheless, cloud kitchens are much more economically viable as the setup provides an opportunity for the business to gain a larger profit margin.

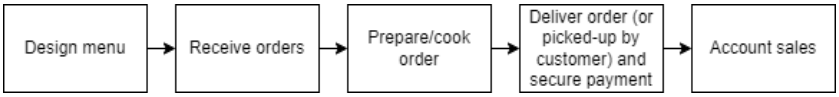

Figure 1. Common processes found in literature on cloud kitchen operations

Not only does the cloud kitchen benefit the business owners, but it also benefits its consumers. For this reason, cloud kitchens have risen in popularity in the industry. Through the flexibility provided by the business model, it has given clients a sense of security since they are able to gain more knowledge about their order before their purchase. In line with this, the long queues that exist in physical stores– due to the food variety offered– are almost unlikely, since people can see the food products being offered simultaneously; the non-existence of long queues saves time and energy for consumers (Tiffany and Augustinus 2022).

In the Philippines, there are a limited number of studies regarding cloud kitchens. However, from a study by Hariramani et al. (2021), it was posited that cloud kitchens can increase customer satisfaction in the local food industry, along with an overall increase in the sustainability of the businesses involved. Consumers get a wider variety of food options, while businesses get an opportunity to promote and sell their products.

2.2 Challenges Faced by Cloud Kitchens

While the cloud kitchen industry is perceived to be advantageous and innovative as it keeps up with digitalization trends, there are still cons observed that may lead to poor performance, customer dissatisfaction, or revenue loss.

Since cloud kitchens are characterized by the lack of physical dine-in spaces, deliveries are an integral part of their operations. For one, in cloud kitchens associated with aggregators, delivery partners are usually involved with customers shouldering the cost of delivery. Meanwhile, the delivery partners are responsible for the vehicular and fuel costs until they are paid by the aggregators concerned. These costs, along with those related to distance traveled and earnings per order are modeled, and it is found out that such a model leads to poor per capita partner earnings because of the large pool of delivery partners involved and the relocation needed (Sinha and Pandit 2019). Furthermore, such costs must be assessed in relation to that of hired delivery staff. Additional points for consideration are the costs of creating a platform for ordering that is unique to the venture which may prove to be initially disadvantageous but more cost-effective long term compared to charged fees incurred when establishing delivery partnerships (Oracle 2020).

Cloud kitchens are also characterized by online, digital transactions, hence an inherent dependence towards the internet. Since order taking, payment processing and accounting, monitoring of order status, and other activities are done online, operational inefficiency and monetary losses may occur in the event of connectivity problems (Choudhary 2019). Customer satisfaction is another factor that impacts cloud kitchen performance, and negative experiences, e.g., incorrectly processed orders, delays, and poor quality of product or service rendered, lead to lower bookings or cancellations (Niemi et al. 2020). The lack of interactions between customers and employees, or at least the very limited nature of them, also dampen the experience in terms of customer service related concerns (Choudhary 2019).

Competition among cloud kitchens and even restaurants because of the factor of time and convenience is also an important factor to consider because of the options available to a customer, hence the continuous need to study the market and maximize sales (Susilowati et al. 2022). An increase in the market size leads to increase in revenue, but the competition causes higher customer acquisition costs incurred and lower levels of loyalty (Meenakshi and Sinha 2019).

3. Methods

3.1 Define the problem

To define the problem, the key performance indicators (KPIs) and the target values for each were identified. The actual values for each KPI are also determined and compared with the targets.

3.2 Root cause analysis (5 Whys)

To determine the root of the problem, the 5 Whys Technique was used. This technique is a problem solving tool in which the researchers start with the outcome, working backwards, then continually ask “why?” until the root cause of the problem is found (Visual Paradigm n.d.).

3.3 Documentation of the current process

To begin the examination of the process, both high level and low level mapping tools were created as an overview of the business processes. A block diagram was used to show the high level documentations wherein it depicts the major processes and their interactions. On the other hand, a detailed activity flowchart was used in showing the low level documentation which involves the specific actions, workflow and rework loops in the process, as well as the time allotted for each subprocess. This allows a more intricate view of current processes wherein points of inefficiency and parts for improvement could be realized (Digital Adoption Team 2022).

3.4 Proposal of improvements

Based on the results from root-cause analysis, high and low level mapping tools, and value analysis, recommendations will be formulated to improve the current operations, as well as create documentation of the proposed improved process.

3.5 Validation of proposal

The proposed improvements will be validated through computations and actual implementation. The projected improvement in the metrics will be computed. The actual improvement on the metrics will also be determined as the recommendations are being implemented.

3.8 Conclusion and areas of future work

The researchers will then give conclusions on how to solve the problem. Areas of future work will also be presented.

4. Data Collection

To be able to properly document the system's operations, an interview was conducted with the startup's management to gain valuable perspectives or insights regarding their operations and KPIs. The researchers were also given access to sales and costs data for the first week of operations (i.e., April 27 to April 30, 2022).

5. Results and Discussion

5.1 Define the problem

As defined already in Section 1, the cloud kitchen studied in this paper has a problem of not reaching their average daily target sales. One of the company's KPIs is a target average daily profit of PHP 840.00, but in their first week of operations, they only reached an average of PHP 221.75 daily profit. Aside from that, the manager has also mentioned that the target profit was still not reached in the succeeding weeks. Also, the actual time from order placement to order receipt is two times greater than the target. If there is a longer service time, then there will be lower sales.

Table 1 shows the comparison of the target and actual values of the KPIs of Lina's Kitchen. The actual values were observed from April 27-30, 2022.

Table 1. Target and Actual Values of KPIs of Lina's Kitchen

KPI	Target Value	Actual Value (as of April 27-30, 2022)
Daily Revenue	At least PHP 2,800.00	PHP 2,341.25
Daily Costs	PHP 1,960.00	PHP 2,119.5
Daily Profit	At least PHP 840.00 (30% of daily revenue)	PHP 221.75
Service Time	Orders must be received by customers within 30 minutes of order placement	1 hour

5.2. Root cause analysis

The possible causes of the problem of not reaching the target daily profit are identified. These include low number of servings sold and high operational costs.

Different root cause analysis tools and process documentation tools are used to further analyze the causes. To analyze the root cause of low number of servings sold, the 5 Whys tool was used.

Low number of servings sold

Figure 2 shows the root cause analysis performed through the use of the Five Whys diagram, citing lack of customer preference consideration and low revenue from past operations as the causes for lack of units sold daily.

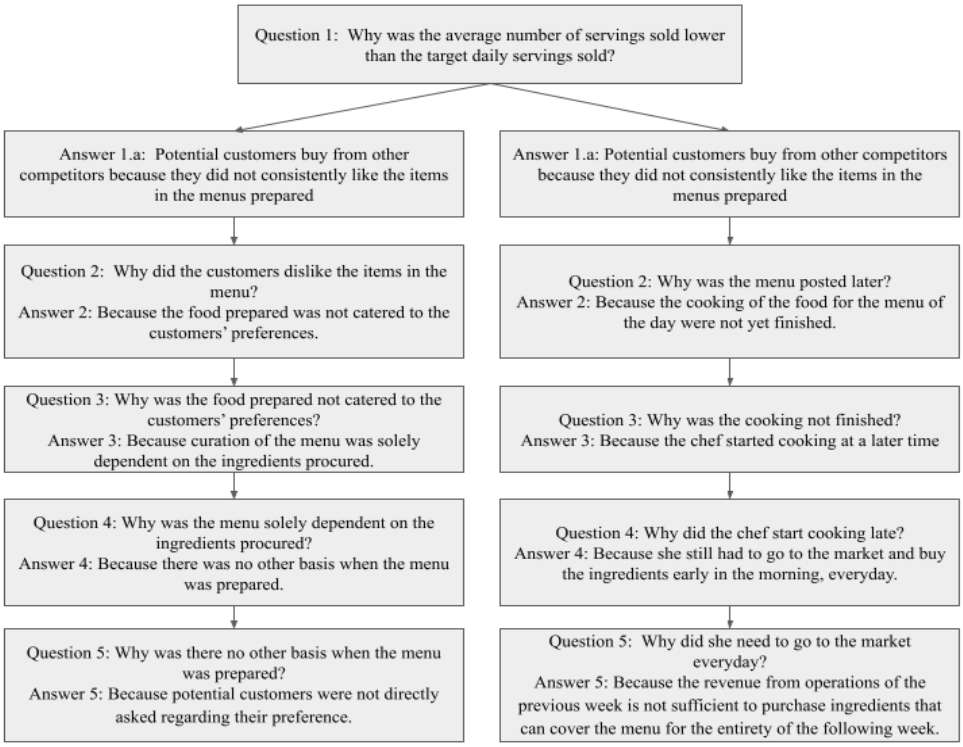

Figure 2. Five Whys Diagram for Lina's Kitchen

5.3 Documentation of the current process

To determine further the causes of low sales and high operational costs, the current process of the local cloud kitchen is documented using both high- and low-level documentation. From the high-level documentation seen in Figure 3, it can be noted that the menu is curated only the night before and ingredients are purchased daily, during the early morning of the same day. This is inefficient mainly because there is time wasted and greater transportation costs are incurred.

Also, the low number of sales can be attributed to potential customers not eventually buying from the company. This is because the menu was posted late (i.e., around 9:30 am) and people have already ordered from the competitors.

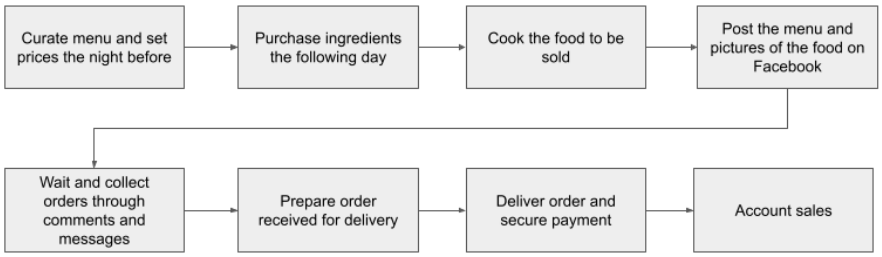

Figure 3. Current High Level Documentation

The low-level documentation of the process is presented in Figure 4. It may be noted that there are a lot of actors needed in the processes of the local cloud kitchen. However, despite this, there are only two employees in the business.

One person purchases the ingredients, cooks the food and packs orders, and another person does the social media postings, order taking, delivery and accounting. This lack of manpower could be seen as a type of waste since there are skill sets that are mismatched or improperly utilized given that each employee has to handle multiple roles, thus making the process inefficient. The lack of manpower also leads to long service time, and eventually, low sales.

Also, the delivery method was observed. At present, the business uses a car to deliver food to customers. This adds to the operational costs of the business.

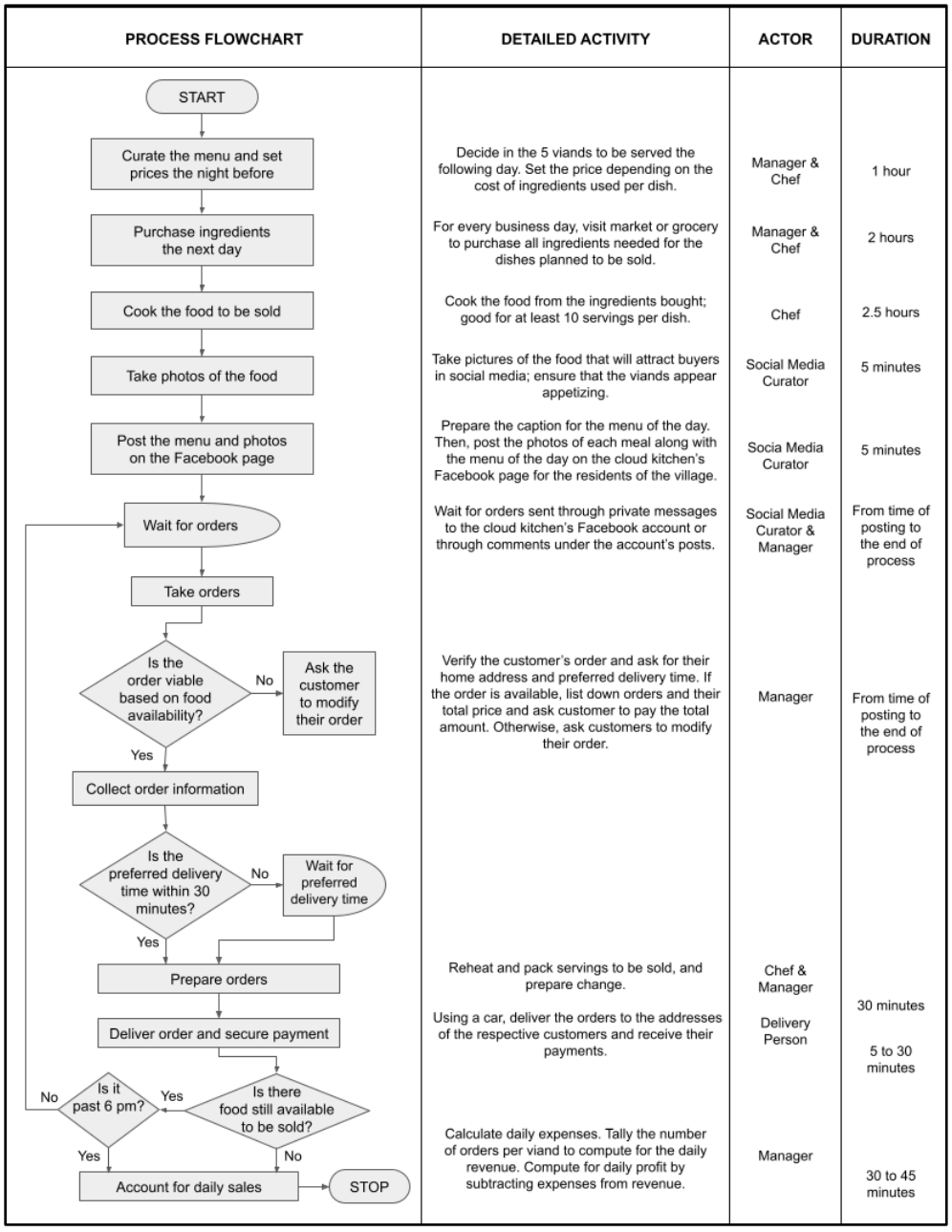

Figure 4. Current Low Level Documentation

5.4 Proposed Improvements

Based on the results, the researchers were able to identify four (4) areas for improvement, namely (a) purchasing ingredients, (b) menu curation, (c) delivery methods, and (d) manpower. Findings show that buying ingredients

everyday wastes time and resources (e.g., gasoline); the menu curation process is inefficient since there is a need for daily constant preparation (i.e., decision making) to be made regarding the food to be sold; the use of a car in bringing the orders to customers is costly in comparison to other alternatives (i.e., motorcycles, bicycles); tasks are distributed among two (2) persons only, which results in another problem where dishes pile up due to the low manpower.

With this, the researchers recommend the adjusted processes in Figures 5 and 6, respectively.

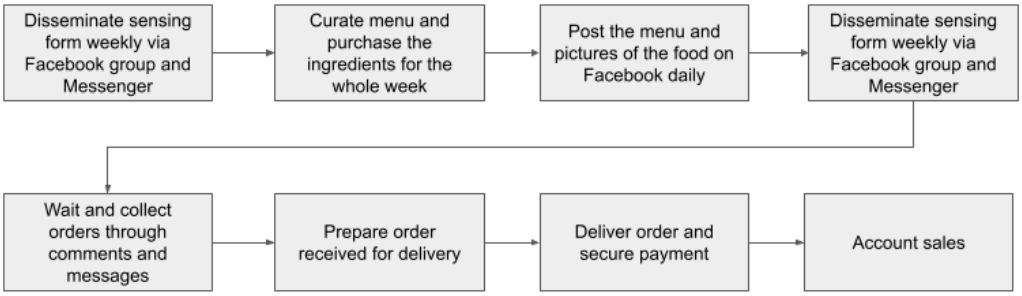

Figure 5. Adjusted High Level Documentation

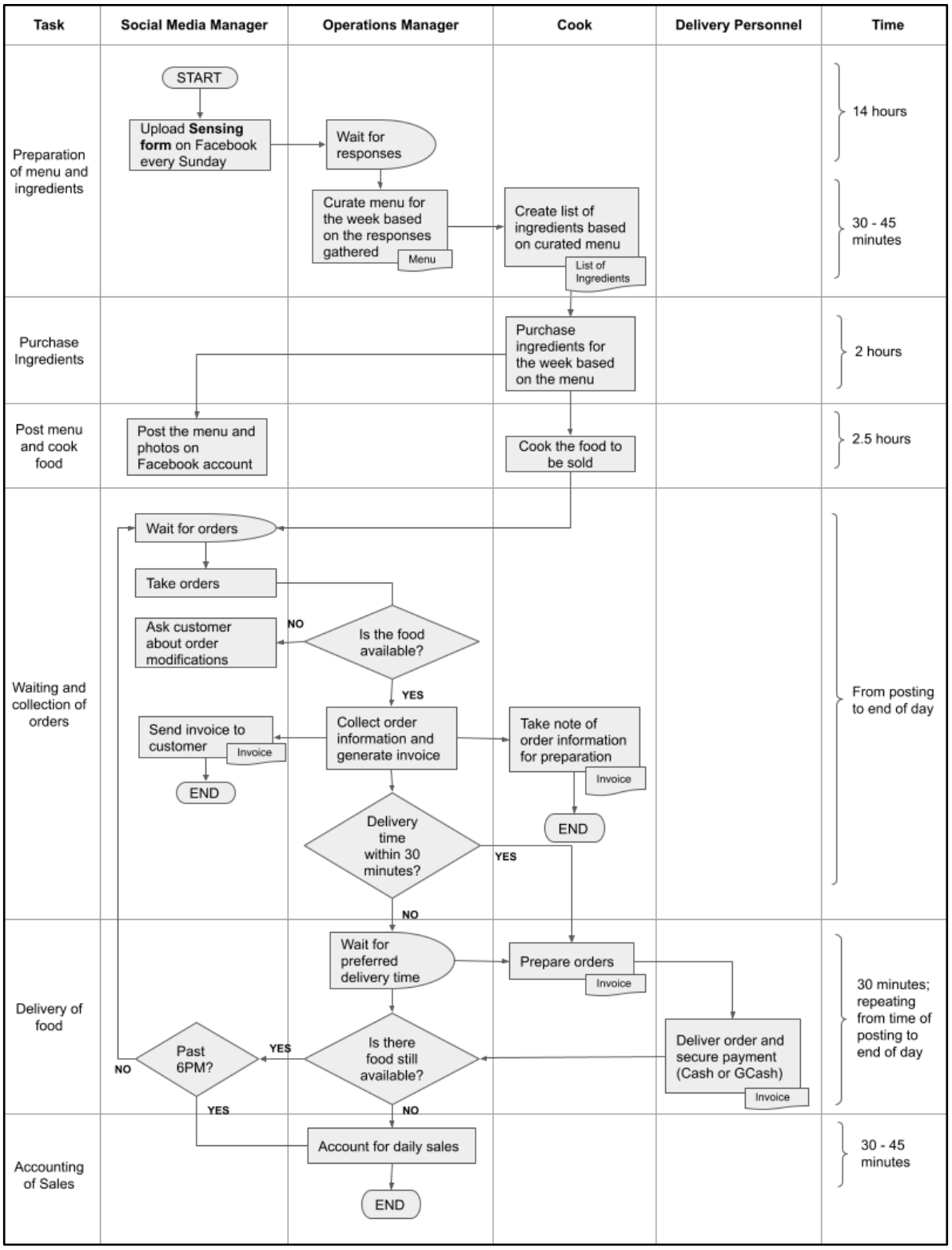

Figure 6. Adjusted Low Level Documentation

The changes made in the processes are shown in the figures and summarized as follows:

Purchasing Ingredients and Menu Curation. A weekly schedule for the food to be sold daily may be established to redact the menu preparation done daily during the night before. A sensing survey may also be done in the Facebook account to get a gauge on the food preferences of the target market. It is generally advised to avoid food options that may decrease in quality during delivery such as those that may become soggy as this will prevent customers from receiving orders that are not on par with the kitchen's standards (Oracle 2020). A sensing survey serves as the medium for the business to gain valuable customer insights, leading to significant transformations in the marketing strategy. In turn, marketing becomes more effective and efficient, thus potentially increasing customer satisfaction and demand (Varadarajan 2020).

Having a weekly-decided menu can then reduce the frequency of the need to go to the market to procure ingredients from a daily basis to a weekly or biweekly basis since food to be sold is already planned. Doing so could greatly save time and resources, such as it could incur less costs and, consequently, return a higher profit from the revenue.

Menu Posting. The menu and pricelist should be posted daily at 8 am, so that orders can be collected earlier. This gives Lina's kitchen a chance to accumulate more orders. Moreover, if the menu is posted earlier, the customers are able to get better service and are able to choose from Lina's Kitchen first, thus minimizing the chance that they buy from other restaurants.

Manpower. Once there is enough working capital generated from the profit, it is recommended for the business to hire more manpower to attend to the other tasks. Operations will be more efficient and the work will be divided equally, as compared to current circumstances where there are only 2 persons tasked to do everything.

Delivery. It is more cost-efficient for deliveries to be done through riding a motorcycle, bike, or e-bike, and reduced overall costs will help increase the venture's profitability.

5.5 Validation

Purchasing Ingredients and Menu Curation
According to the manager of Lina's Kitchen, each round trip to and from the market costs Php 182. Albeit not being able to satisfy the weekly or bi-weekly schedule recommended, they were able to reduce the frequency of going to the market for the purchase of ingredients. From the recommendation, the procurement of ingredients became every other day, leading to the total weekly incurred transportation costs to decrease to a total of PHP 546 from the original PHP 1,092. With this, there was an observed 50 percent decrease in the transportation costs incurred by Lina's Kitchen.

Dissemination of sensing surveys
Lina's Kitchen has yet to implement and disseminate sensing surveys. As sensing forms can influence customers towards a positive experience as it tailors the business services towards customer needs and may improve satisfaction, it is estimated that approximately 89 percent of these customers will return and make another purchase (Rodgers 2023). Thus, this induces customer loyalty and potentially increases revenue.

Delivery
The mode of delivery to the customers of Lina's Kitchen has been changed to using a motorcycle instead of a car. This reduced fuel costs from a weekly average of PHP 500 to PHP 300. Effectively, this reduces the expenses being deducted from the weekly revenue to obtain the profit.

Menu Posting
After the recommendations were sent to the company, Lina's Kitchen was only able to implement the recommendation of posting the menu earlier at the time of 8:00 A.M. and the following actual data were recorded: April 27 to 30, 2022 average daily sales is PHP 2,341.25 and May 30 to June 4, 2022 average daily sales is PHP 3,010.83. This is an actual 92.90 percent increase in sales after the menu was posted at an earlier time.

Manpower

Since May 30, 2022, Lina's Kitchen hired another delivery person and thus has a total of two delivery persons who are assigned to deliver to the opposite parts of the village. Each delivery person will deliver food to only one side of the village. According to the manager, this resulted in a reduction of approximately 50 percent in the total waiting time of each customer from order placement to order receipt. This is equivalent to 30 minutes of service time.

From these different aspects of the operations addressed by the proposal, Table 2 shows the KPIs of the business before and after the implementation of the proposed improvements. Values tabulatated are summarized and further expounded in Appendices A and C. It could be noted that there was a significant increase in the daily revenue and profit, and a decrease in daily costs and service time.

Table 2. Improvement on the business' KPIs

KPI	Before	After
Daily Revenue	Php 2,341.25	PHP 3,010.83
Daily Costs	Transportation cost (Market): PHP 182.00 Transportation cost (Delivery): PHP 83.33 Other costs: PHP 1,854.17	Transportation cost (Market): PHP 91.00 Transportation cost (Delivery): PHP 50.00 Other costs: PHP 1,638.00
Daily Profit	PHP 221.75	PHP 1,231.83
Service Time	1 hour	30 minutes

6. Conclusion

Cloud kitchens provide possible opportunities for its business owner once established. However, multiple problems are encountered and it takes a significant amount of time before a brand gets to have their processes become seamless. In this case in Lina's Kitchen, analyses have shown that the key areas for improvement for the business are ingredient procurement, menu curation, delivery methods, and manpower. Focusing on these pain points for the company can improve overall quality of services. The most important aspect of their services must focus on the avenues wherein they communicate with their customers and satisfy their demands. Thus, the company would need to create a sensing form and post it weekly in order to know what the customers want to eat, and will thus be the basis for the menu curation. This also implies that they will purchase their ingredients on a weekly basis.

Along with the identified points for improvement, there are future areas for research and ventures Lina's Kitchen can also opt to consider if investigated to be possible. These include the ability to afford the wages for hiring additional manpower, to move into a commercial space for a bigger kitchen, and to expand their brand outside the Pasig Green Park Village.

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Appendix

Appendix A.

Daily Sales Data for the First Week of Operations (April 27-April 30, 2022)

April 27, 2022	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice					
Pork Sisig	20		₱ 70.00	₱ 1,400.00	
Pork Adobo	7		₱ 75.00	₱ 525.00	
Beef Nilaga	7	₱ 2,785.00	₱ 80.00	₱ 560.00	₱ 460.00
Paksiw na Bangus	8		₱ 65.00	₱ 520.00	
Pinakbet	6		₱ 40.00	₱ 240.00	
Microwavable					
	48		₱ 66.00	₱ 3,245.00	

April 28, 2022	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice					
Pork Sisig	7		₱ 70.00	₱ 490.00	
Sinampalukang Manok	10		₱ 75.00	₱ 750.00	
Fried Tilapia	6	₱ 1,765	₱ 50.00	₱ 300.00	₱ 1,300.00
Crispy Kare Kare	15		₱ 75.00	₱ 1,125.00	
Ginataang Langka	10		₱ 40.00	₱ 400.00	
Microwavable					
	48		₱ 62.00	₱ 3,065.00	

April 29, 2022	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice					
Pork Sinigang	4		₱ 75.00	₱ 300.00	
Pork Spareribs Caldereta	6		₱ 75.00	₱ 450.00	
Sinaing na Tulingan	7	₱ 2,502	₱ 60.00	₱ 420.00	-₱ 927.00
Tortang talong w/ Giniling	3		₱ 55.00	₱ 165.00	
Monggo	6		₱ 40.00	₱ 240.00	
Microwavable					
	26		₱ 61.00	₱ 1,575.00	

April 30, 2022	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice					
Sinigang na Bangus sa Miso	7		₱ 70.00	₱ 490.00	
Chicken Afritada	5		₱ 65.00	₱ 325.00	
Bopis	7	₱ 1,426	₱ 65.00	₱ 455.00	₱ 54.00
Fried Tilapia	1		₱ 50.00	₱ 50.00	
Ginataang Sitaw	4		₱ 40.00	₱ 160.00	
Microwavable					
	24		₱ 58.00	₱ 1,480.00	

Appendix B.

Price List for Viands Sold

ITEM	SELLING PRICE/UNIT
Pork Sisig	₱ 75.00
Pork Adobo	₱ 75.00
Beef Nilaga	₱ 80.00
Paksiw na Bangus	₱ 65.00
Pinakbet	₱ 40.00
Sinampalukang Manok	₱ 75.00
Fried Tilapia	₱ 50.00
Crispy Kare Kare	₱ 75.00
Ginataang Langka	₱ 40.00
Pork Nilaga	₱ 75.00
Pork Spareribs Caldereta	₱ 75.00
Sinaing na Tulingan	₱ 60.00
Tortang talong w/ Giniling	₱ 55.00
Monggo	₱ 40.00
Sinigang na Bangus sa Miso	₱ 70.00
Chicken Afritada	₱ 65.00
Bopis	₱ 65.00
Ginataang Sitaw	₱ 40.00
Tinolang manok	₱ 75.00
Pork Steak	₱ 75.00
Ginataang Tilapia	₱ 65.00
Ginisang Toge	₱ 40.00

Appendix C.

Daily Sales Data for the May 30-June 4, 2022 Operations

30-May-22	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice	2		₱ 15.00		
Pork Binagoongan w/ talong	10		₱ 75.00	₱ 750.00	
Lechon Kawali	10		₱ 75.00	₱ 750.00	
Ginisang Mais	11		₱ 40.00	₱ 440.00	
Ginataang Puso ng Saging	13	₱ 4,605	₱ 40.00	₱ 520.00	-₱ 1,645.00
Fried Galunggong	10		₱ 50.00	₱ 500.00	
				₱ -	
Microwavable	3		₱ 5.00		
				₱ 2,960.00	

2-Jun-22	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice	2		₱ 15.00		
Laing	8		₱ 40.00	₱ 320.00	
Sinaing na Tulingan	24		₱ 65.00	₱ 1,560.00	
Sinampalukang Manok	9		₱ 75.00	₱ 675.00	
Beef Steak	10	₱ 5,060	₱ 80.00	₱ 800.00	-₱ 880.00
Pork Igado	11		₱ 75.00	₱ 825.00	
				₱ -	
Microwavable	3		₱ 5.00		
				₱ 4,180.00	

31-May-22	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice	1		₱ 15.00		
Tinolang Manok	9		₱ 75.00	₱ 675.00	
Pork Adobo	7		₱ 75.00	₱ 525.00	
Pinakbet	7		₱ 40.00	₱ 280.00	
Menudo	12	₱ 48	₱ 75.00	₱ 900.00	₱ 2,582.00
Pritong Dalagang Bukid	5		₱ 50.00	₱ 250.00	
				₱ -	
Microwavable	5		₱ 5.00		
				₱ 2,630.00	

June 3, 2022	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice	4		₱ 15.00		
Monggo	16		₱ 40.00	₱ 640.00	
Pork Spareribs in BBQ sauce	9		₱ 80.00	₱ 720.00	
Adobong Pusit	12		₱ 65.00	₱ 780.00	
Paksiw na Bangus	5	₱ 744	₱ 65.00	₱ 325.00	₱ 2,776.00
Crispy Kare Kare	12		₱ 85.00	₱ 1,020.00	
alamang	1		₱ 35.00	₱ 35.00	
Microwavable	1		₱ 5.00		
				₱ 3,520.00	

June 1. 2022	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice	0		₱ 15.00	₱ -	
Pork Sisig	7		₱ 75.00	₱ 525.00	
Pork Pochero	9		₱ 80.00	₱ 720.00	
Tokwat Baboy w kinchay	3		₱ 80.00	₱ 240.00	
Ginataang Sigarilyas	5	₱ 155	₱ 40.00	₱ 200.00	₱ 2,070.00
Fried Bangus	6		₱ 50.00	₱ 300.00	
Sarsiadong Dalagang Bukid	4		₱ 60.00	₱ 240.00	
Microwavable			₱ 5.00	₱ -	
				₱ 2,225.00	

4-Jun-22	TALLY	COSTS	SELLING PRICE	SALES	TOTAL PROFIT
Rice	3		₱ 15.00		
Chopsuey with Canton	11		₱ 40.00	₱ 440.00	
Sopas	5.5		₱ 40.00	₱ 220.00	
Maruya	22		₱ 15.00	₱ 330.00	
Fried Hito	11	₱ 62	₱ 60.00	₱ 660.00	₱ 2,488.00
Batchoy	12		₱ 75.00	₱ 900.00	
				₱ -	
Microwavable	0		₱ 5.00	₱ -	
				₱ 2,550.00	

Biographies

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Regine A. Tejada is an Assistant Professor of the Department of Industrial Engineering and Operations Research at the College of Engineering, University of the Philippines Diliman, Philippines. She earned M.S. in Industrial Engineering and B.S. in Industrial Engineering from the University of the Philippines Diliman. Her research interests include production systems, information systems, and assignment models. She has taught courses on facilities systems design, systems and procedures, industrial materials and processes, and production systems.