

**Restaurant Management System for SME Restaurant**

By

Nur Hanisah Mohd Fuzi

17001220

Dissertation submitted in partial fulfillment of  
the requirements for the  
Bachelor of Information Systems (Hons)  
(Computer Information Sciences)

SEPTEMBER 2021

Universiti Teknologi PETRONAS  
32610 Bandar Seri Iskandar  
Perak Darul Ridzuan  
Malaysia

CERTIFICATION OF APPROVAL

**Restaurant Management System for SME Restaurant**

by

Nur Hanisah Mohd Fuzi

17001220

A project dissertation submitted to the  
Science and Information Technology Programme  
Universiti Teknologi PETRONAS  
in partial fulfilment of the requirement for the  
BACHELOR OF INFORMATION SYSTEMS (Hons)  
(COMPUTER INFORMATION SCIENCES)

Approved by,



---

(Ts. Jale B Ahmad)

UNIVERSITI TEKNOLOGI PETRONAS  
BANDAR SERI ISKANDAR, PERAK  
September 2021

## CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



---

NUR HANISAH MOHD FUZI

## **Abstract**

This study aims to discuss the current situation of SME restaurants within Malaysia in managing their daily operations. Secondly, this study explores factors which are obstacles and hurdles that these SME restaurants face when managing their daily operations. Finally, this study is to propose and recommend a restaurant management system to assist the SME restaurant in handling and managing the daily operations of the restaurant in a more systematic way. Each SME restaurant has their own way in handling their daily operations. However, some of their methods are still the conventional method using paper back when technology is at hand. Though it may take time in adapting themselves to using the current technology in managing their business, the progress towards its achievement could be facilitated by better understanding the technology available to handling and managing the restaurants daily operations in a more systematic and easier way.

This study addresses the method currently used by the SME restaurant in managing their daily operations, reviews the main obstacles and hurdles faced in managing the daily operations, and finally making a recommendation of implementing a restaurant management system to provide and support the SME restaurant for the long term in handling and managing their daily operations with ease and in a more systematic method.

*Keywords:* Management systems, SME restaurants

## **Acknowledgement**

I wish to thank Mrs. Ju for taking her time in her busy schedule to participate in this study. Her willingness to share her experience has inspired me when conducting this study. I am hoping that the results will inspire and guide other SME restaurants in their hopes to grow and upscale their business through the use of technology in the restaurants.

I would like to express my gratitude to my supervisor Dr. Jale B Ahmad for his understanding and advice when conducting this study. I would also like to express my gratitude towards Universiti Teknologi Petronas and all the staff for the knowledge I have gain as they have constantly push us students to be the best we can be and to look towards a bright future.

I am extremely grateful to my family for their constant support, especially my mother. She has always taught me to never give up in the face of a challenge, to always strive to be the best that I can be. Her love and support have guided me to rise higher than ever before and to show that I am special just by being myself. She has always been proud of my accomplishments and will always be there to lend a helping hand.

## Table of Contents

<b>Certification of Approval</b> .....	I
<b>Certification of Originality</b> .....	II
<b>Abstract</b> .....	III
<b>Acknowledgement</b> .....	IV
<b>CHAPTER 1: INTRODUCTION</b> .....	<b>1</b>
1.1 BACKGROUND OF STUDY .....	1
1.2 PROBLEM STATEMENT .....	1
1.3 OBJECTIVES AND SCOPE OF STUDY .....	2
1.3.1 Objectives .....	2
1.3.2 Scope of Study .....	2
<b>CHAPTER 2: LITERATURE REVIEW</b> .....	<b>3</b>
2.1 FRONT OF HOUSE OPERATIONS (FOH) .....	3
2.2 BACK OF HOUSE OPERATIONS (BOH) .....	4
2.3 CONCLUSION .....	5
<b>CHAPTER 3: METHODOLOGY</b> .....	<b>6</b>
3.1 RESEARCH METHOD .....	6
3.2 STUDY QUESTIONS AND DATA COLLECTION .....	6
3.3 INTERVIEW SUMMARY .....	8
3.4 CONTEXTUAL ANALYSIS .....	8
3.5 AGILE METHODOLOGY .....	10
3.5.1 Phase 1: Research .....	11
3.5.2 Phase 2: Planning .....	11
3.5.3 Phase 3: Development and Design .....	13
3.5.4 Phase 4: Testing .....	14
3.5.5 Phase 5: Launch .....	14

<b>CHAPTER 4:</b>	<b>RESULTS AND DISCUSSION</b> .....	<b>15</b>
	4.1 RESULTS .....	15
	4.2 DISCUSSION .....	15
<b>CHAPTER 5:</b>	<b>CONCLUSION AND RECOMMENDATION</b> .....	<b>16</b>
	5.1 CONCLUSION .....	16
	5.2 RECOMMENDATION .....	16
<b>REFERENCES</b> .....		<b>17</b>
<b>APPENDIXES</b> .....		<b>18</b>

**List of Figures**

Figure 1: AGILE Methodology..... 10  
Figure 2: Excel Logo..... 12  
Figure 3: Project Timeline..... 13

**List of Tables**

Table 1: Contextual Analysis Findings..... 9



# **CHAPTER 1**

## **INTRODUCTION**

### **1.1. BACKGROUND OF STUDY**

For SME businesses within the food and drinks industry, businesses can be successful or unsuccessful based on a variety of reasons. However, when comparing a successful business to one that is struggling, notice a significant difference in how they manage their daily operations through Point of Sale (POS) can be noticed. POS refers to a system that is widely utilized in the restaurants. This automated method enables business owners to keep track of sales, cash flow, and food inventories, as well as greatly simplifying bookkeeping. Nowadays, it is difficult for SME restaurants to survive and thrive in the food and drinks industry due to its competitiveness, especially with the current Covid-19 pandemic. Thus, a restaurant management system for POS is essential when running a product-based business. This paper discusses on the current hurdles of an SME restaurant with managing their daily operations and the use of technology for inventory management in assisting them with their business.

### **1.2. PROBLEM STATEMENT**

SME restaurants within Malaysia currently have difficulties in managing their daily operations, especially with the current Covid-19 pandemic that has made businesses go in a downward spiral. Furthermore, some of these SME restaurants that recently started their business still use the paperback method of not only recording the data collected, but also to assist in managing their operations from inventory, staff management, financial, etc. Thus, these restaurants do not have a systematic method of managing their daily operations which at times leaves the operation process of the restaurant in chaos.

Questions such as “What is the main factor that can assist the SME restaurant in managing their daily operations?”, “What are the obstacles and hurdles faced by the SME restaurants?”, and “Which part of their daily operations do they have the most challenge in managing their daily operations and how to assist them with this factor rather than push them?” are to be reviewed in this project.

### **1.3. OBJECTIVES AND SCOPE OF STUDY**

#### **1.3.1. Objectives**

- a. To explore factors that this SME restaurant is managing their daily operations and sustaining their business.
- b. To explore factors which are obstacles and hurdles they face when managing their restaurant.
- c. To propose and recommended the use of a restaurant management system to assist them in handling and managing their daily operations in a more systematic method.

#### **1.3.2. Scope of Study**

The aim is to identify the phases of operational components of the SME restaurant in managing the daily task of the restaurant in sustaining the business. The result of this study is conducted by studying and utilizing data from the current SME restaurant within Malaysia and utilizing the data in developing a restaurant management system that can assist the SME restaurant in handling and managing the of the restaurant in a more systematic method and to obtain accurate information of the current situation of the SME restaurant.

## **CHAPTER 2**

### **LITERATURE REVIEW**

Technology is the next new challenge that many people are currently confronting. Many business owners have been caught off stride by the rapid development of the Covid-19 crisis around the world. Those that were hesitant to embrace digital transformation earlier have been badly disrupted by a sudden shift in where digital technology is now required during this crisis. Service industries such as Food and Beverages have been affected the most among all industries and need to shift their focus to implementing digital transformation towards their business model and everyday tasks. Malaysian businesses currently are having to adapt to the digital economy, where demand for information technology services have soured, particularly amid the current pandemic crisis (WTO, 2020). With technology being the main focus, this literature review discusses on the use of technology within the current restaurant business with the main points based on Front of house operations (FOH) and Back of house operations (BOH) of an SME restaurant.

#### **2.1 FRONT OF HOUSE OPERATIONS (FOH)**

Front of house operations (FOH) is where the main process of taking the customer's orders, delivering food to the customers and ends with the payment. FOH staff are mainly the general manager, host or hostess, servers, and basically anyone that mostly interacts with the customers. POS (Point of Sale) systems, POS integrated modules, POS integrated payment applications, and some developing technologies for FOH operations are all employed during the FOH operations (Cavusoglu, 2019).

Regarding payment, payment applications that are embedded into the POS, tableside payment gadgets, mobile wallets, and mobile remote payment/wireless credit/debit card authorization are examples of customer-facing payment technologies that

are now gaining popularity among both restaurants and customers (Cavusoglu, 2019). One example is the use of the kiosk system implemented at the McDonald's restaurants where customers can request their orders and make the payment without having to venture to the counters for orders and payment. With the current pandemic at hand, many businesses must resort to the use of technology for FOH operations to abide with the SOP implemented in reducing contact among people and to continue with their service towards their customers.

## **2.2 BACK OF HOUSE OPERATIONS (BOH)**

Back of house operations (BOH) refers to all the behind-the-scenes activities that customers do not witness and acts as the central command center in the restaurant where food is prepared and administrative work is done (WebstaurantStore, 2019). Inventory, financial conditions, labour scheduling and productivity, and food pricing can all be measured and monitored using BOH operation systems (Cavusoglu, 2019). Some of the important BOH operations systems can include: accounting/financial software, labor management systems/labor screening and recruitment tools, CRM systems, business intelligence systems, inventory management applications, company intranets, kitchen management systems, integrated cost control systems, cloud-based applications, enterprise management systems (EMS), enterprise reporting systems (ERS) and real-time based reporting, disaster recovery systems, and personal digital assistants (PDAs) and intra-day reporting (Cavusoglu, 2019).

An example of the use of technology for BOH is for managing inventory. Maintaining inventory is a time-consuming operation, but technological advancement has made it much easier to do so since everything is kept on hardware, and the use of software applications helps to decrease time and provide effective results (Joshi & Alkonda, 2019). Inventory management applications combined with accounting systems can provide accurate details on the quantity and price of the products while monitoring the stock being used for the restaurant whether replacement is required (Cavusoglu, 2019).

## **2.3 CONCLUSION**

In conclusion, with the current Covid-19 pandemic creating a significant impact on Malaysia's economy, digital transformation using the current advancement of technology and software systems have proven to be instrumental for businesses in the battle against the Covid-19 pandemic in all areas of the business. Although there are chances for restaurant businesses to upscale and meet customers demand, any digital transformation must have a long-term strategic vision to overcome the pandemic, expand and maintain a successful business. Restaurant businesses can emerge stronger, more agile, and more customer-centric than before if they implement the proper digital transformation (Wong, 2020).

## **CHAPTER 3**

### **METHODOLOGY**

Based on the literature review, having the right digital transformation such as in inventory management is the key for SME businesses in surviving and thriving in the food and drinks industry. Furthermore, the Covid-19 pandemic has posed a problem for SME businesses in managing their daily operations in hope to one day expand their business. Thus, qualitative study is required as the researcher must present conclusions that convert raw data into knowledge. A qualitative researcher must participate in active and demanding analytic techniques throughout the study process. To read, understand and interpret the data, these processes are essential in conducting qualitative study.

#### **3.1 RESEARCH METHOD**

This study started with a questionnaire interview with a participant to construct a theoretical framework. This stage assists in identifying the current problems connected to the business. In general, this type of study includes information on the issue being studied in the study based on the participant's interview. This qualitative study aims to identify the current methods of the SME business in managing their daily operations and identify the hurdles being faced so that recommendations can be made to assist them in developing a systematic method to solve the study problem, analyze the symptom, facts, and knowledge needed, and compile a hypothesis based on the information and data gathered (Paperpile, 2021).

#### **3.2 STUDY QUESTIONS AND DATA COLLECTION**

The study questions were written in such a manner that they clarify many aspects of the study, including the factors that will be studied, as well as the problem that will be addressed (Bouchrika, 2021). The study questions and problem statement created the foundation for the study. It is an answered inquiry into a specific issue or subject that the

individual wishes to comprehend, without any prior expectations about how the participant would react (Kowalczyk, 2021).

The following questions that were asked in this study using qualitative design and personal interviews for data collection were:

1. How many years has the business been operating?
2. What are the challenges faced for the business?
3. How do you overcome these challenges?
4. Do you plan to make digital transformation as your future plan for your business in any area whether it is inventory, e-commerce, marketing, etc.?

The interview list of questions was provided to the participant ahead of time so that they would be prepared to respond depending on the specific questions and topic (See Appendix A).

The participant was contacted before the interview to acquire their consent to participate in the session. The goal of the interview and the study objectives were explained to the participant. Before the interview, permission to utilize the information from the interview was requested. For their final approval, the participant receives a copy of all written interviews done. The participant was further told that the information would be treated confidentially. The questions in the semi-structured interview questionnaires were around the participant's experience, challenges, how they overcome those challenges, and using digital transformation in any area of their business.

Before participating in this study, the participant was provided and asked to read a Letter for Consent Form (see Appendix B). The consent form expresses the agreement of confidence between the researcher and the participant. The participant was also asked to sign the Response to Request, stating that they had read and understood the rules of participation (see Appendix C).

### **3.3 INTERVIEW SUMMARY**

The answers obtained through the interview were then collected and analyzed. Based on the interview itself one such problem identified in the interview as quoted by Mrs. Ju was “We decided we heavily focus on cooking and quality of food offered to the customers. We fully took control of the overall cooking and operations of the café as we do not trust others to know the family recipes as we are afraid that others might steal it. But we still have difficulty in managing our inventory and point-of-sale due to unpredictable customer buying power.” Moreover, the interview has also highlighted that they don’t use much technology in the restaurant due to limited knowledge of the current technological trends, and that they find it difficult in using complex technology for their daily operations. From this interview the problem is then identified, and solutions can be created to solve the problem. This is where technology come into the picture. By applying simple technology for their daily operations such as POS, it can bring a difference in how they manage things, and it may bring an increase in their sales.

### **3.4 CONTEXTUAL ANALYSIS**

With the information obtained through the interview, contextual analysis is conducted for the theoretical framework. Contextual analysis is the systematic examination of contextual user work activity data acquired through contextual inquiry for the goal of understanding the work environment for a new system to be created. This is carried out by compiling substantial relevant literature on SME restaurants management system (Hartsosn., Pyla, 2012). Four research thesis has been narrowed down for the contextual analysis. These four research thesis include:



**Article I.** Research conducted by Cavusoglu (2019), ‘An analysis of technology applications in the restaurant industry.’

**Article II.** Research conducted by Abel and Obeten (2015), ‘Restaurant Customer Self-Ordering System: A Solution to Reduce Customer/Guest Waiting Time at the Point of Sale.’

**Article III.** Research conducted by Williams and Simmons (2010), ‘A Case Study In The Design of a Restaurant Management System.’

**Article IV.** Research conducted by Mukwankungu, Lumbwe, Niati and Mbohwa (2019), ‘The Importance of Quality Management System and Leadership in South African Restaurant Fast Food and Catering Sector – Case of The Gauteng Region.’

Based on these four thesis, the researchers focus on understanding the management of SME restaurants through:

- Use of technology at hand
- Uses of management system for SME restaurants.

The table below shows the findings of the contextual analysis of the four research thesis.

Table 1: Contextual Analysis Findings

Topic	Elements	Description
Use of Technology at hand	Information Systems	- Collect, process, store data of operations in the restaurant
	POS (Point-of-Sale system)	- For front of house (FOH)use - Manages food item details
	BOH (Back of House operations systems)	- Manages inventory, financial status, cost of food, etc.

Topic	Elements	Description
Uses of management system in restaurants	Data consistency	- Accurate and consistent data to be used and processed
	Ease of adding and deleting items	- Add/Delete food item details - Update menu - Inventory management
	Reports available	- Daily inventory report - Daily sales report, etc.

### 3.5 AGILE METHODOLOGY

With the theoretical analysis completed, AGILE methodology was then being used in the development of a restaurant management system. AGILE is a collection of iterative software development approaches in which requirements and solutions emerge from cooperation among self-organizing cross-functional teams. AGILE methodology is the most convenient regarding the development of a system. Furthermore, AGILE is one methodology I'm most familiar with due to past projects using the same methodology. By breaking the project into several phases from the research to the planning and the development, it will allow me to manage myself better when attempting the project.

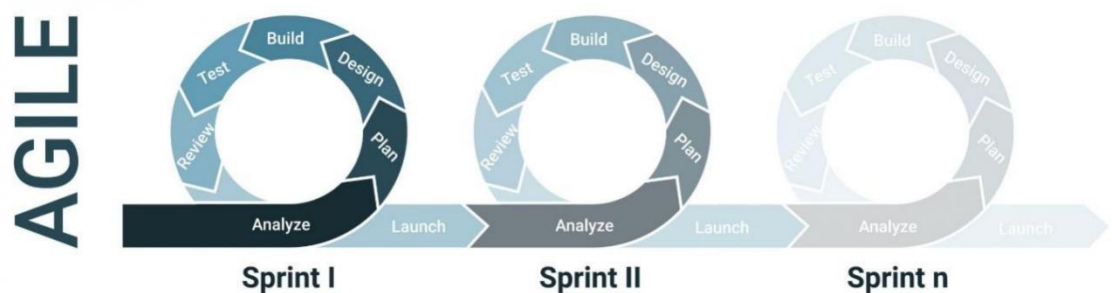


Figure 1: AGILE methodology

The phases of the AGILE methodology is listed as below:

Phase 1: Research

- Plan the project
- Conduct the research
- Retrieve the data

Phase 2: Planning

- Plan the deliverable
- Identify the requirements
- Set the timeline
- Create the storyline

Phases 3: Development and Design

- Begin the development of the restaurant management system

Phase 4: Testing (Repeat phase 3 should errors occur)

- Test the restaurant management system prototype
- Identify the errors and any requirements that needs to be fixed

Phase 5: Launch

- Deploy the final product of the restaurant management system

### **3.5.1. Phase 1: Research**

Phase 1 is considered the research phase where proper research, planning and data gathering is conducted. With the problems identified. A solution is needed to be able to solve the problem. As conducted in the contextual analysis (please refer to 3.5 Contextual analysis), most restaurants nowadays employ the use of technology, more specifically a restaurant management system, in most of their operations. Though I am unable to solve all the problems, one such problem that can be solved is the use of a restaurant management system for Point-of Sale (POS).

Point of sale is mainly conducted for Front of House (FOH) operations where most of the interaction with the customers take place. While considering that of Mrs. Ju's interview where she has never considered digital transformation for her restaurant and the minimal use of technology, a simple restaurant management that can be used easily by the employees is considered the best option.

### **3.5.2. Phase 2: Planning**

Phase 2, the planning phase, is where the requirements of the restaurant management system is identified, the deliverables are planned, and a storyline takes place. The planning phase is where estimates are made on your work based on self-contained work units.

When it comes to a restaurant management system that assists in a POS a few requirements are needed.

The main requirements include:

- a. Managing the table settings
- b. Managing the transaction orders
- c. Generating the reports

With these requirements in mind and with the data collected in phase 1, one of the simplest and easy to understand methods of developing a restaurant management system for POS is by using Microsoft Excel. Microsoft Excel is the leading spreadsheet program used by companies in all industries, not just the food and drinks industry. It is a powerful tool that can assist in data analysis, documentation, calculation and many more. Thus, making a perfect tool to be used in creating a simple restaurant management system, even for those with limited knowledge of technology.



Figure 2: Excel Logo

The project timeline has also been made to keep track of the progress of the study.

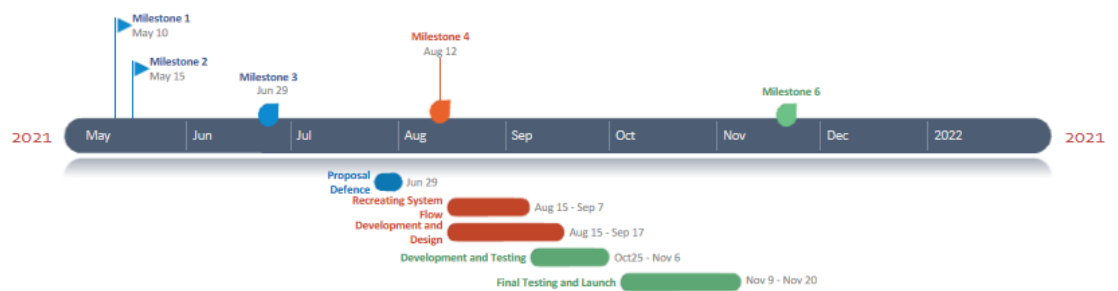


Figure 3: Project Timeline

### 3.5.3. Phase 3: Development and Design

Phase 3, the development and design phase, is where the actual development of the restaurant management system began. With the requirements and tools identified, the development of the restaurant management system began with determining the overall design. The design of the restaurant management system began with designing the system flow of the restaurant management system (see Appendix E and F).

With the system flow in place, the actual development of the restaurant management system began. With the guidance of PK: An Excel Expert, an online

excel tutorial website that provides tutorials and demos of advance Excel work, the development has smoothly come into place, from the dashboard to the table settings, item settings, transaction settings and the report settings.

Some of the formulas used for the restaurant management system include:

- a. HLOOKUP (lookup\_value, table\_array, row\_index, [range\_lookup])
- b. INDEX (array, row\_number, column\_number)
- c. DATE (year, month, day)
- d. SUMPRODUCT (array1, [array2, ...array\_n])
- e. etc.

#### **3.5.4. Phase 4: Testing**

With the first product of the development completed, testing is done to ensure that all functions are working properly. Adjustments have been made where errors have occurred. Common errors such as Value Error (#VALUE!), Null Error (#NULL!), and Reference Error (#REF!) have occurred, and thus, phase 3 is repeated until there were no errors.

#### **3.5.5. Phase 5: Launch**

Once the final product of the restaurant management system has been completed, it is ready to be tested and used in the restaurant.

## **CHAPTER 4**

### **RESULTS AND DISCUSSIONS**

#### **4.1 RESULTS**

Based on the overall design and development of the restaurant management system, the result has been satisfactory. The restaurant management system is at a point where it can function for the Point of Sale (POS) of an SME restaurant. Many of its functions are working properly, the design of the overall restaurant management system is easy to understand, and the reports and invoices are all simple enough to understand and print if needed (see Appendix G to Q for the final results). The restaurant management system to assist in managing the point of sale of an SME restaurant is simple enough to understand and use even for those with limited knowledge of digital transformation for the restaurant.

#### **4.2 DISCUSSIONS**

This restaurant management system is a good starting point for anyone with limited knowledge of the use of technology in a restaurant. Though it can take time for the employees to adapt to the use of technology as most have been used to the conventional method. By constantly using this restaurant management system for the Front of House (FOH) operations of the SME restaurant, they will find that it has made the daily operations much easier. Furthermore, through the reports generated in the restaurant management system, it can help them keep track of transactions made to make the decision-making process much easier and to be able to predict the future sales of the restaurant.

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 CONCLUSION**

In conclusion, this study has highlighted that some SME restaurants in Malaysia have difficulty in managing their daily operations, especially with the current Covid-19 pandemic. Furthermore, as identified in the interview with Mrs. Ju, some of these SME restaurants have not implemented digital transformation towards their business. This leads to the objectives of this study which are to explore the factors that the SME restaurant is managing their daily operations well, to understand the obstacles faced when managing their restaurant and to provide the solution to assist them in handling and managing their daily operations in a more systematic way. These objectives have been accomplished through this study in identifying some of the obstacles faced by an SME restaurant in managing their daily operation. Moreover, a solution has been provided by using a restaurant management system to help oversee the daily operations for Point of Sale (POS). As a result, this proves how important digital transformation, no matter how small, can provide a difference for an SME restaurant in managing their daily operations.

#### **5.2 RECOMMENDATION**

As stated in Chapter 4, this restaurant is a good stepping stone in understanding the use of technology in an SME restaurant and to better prepare for digital transformation in the future. One recommendation is that once the restaurant has better adapted themselves in using this restaurant management system, they can expand to a more advance system that not only assists them in POS, but also for all areas of the restaurant. This will not only help with the daily operations, which can hopefully increase the sales of the restaurant, but also to improve the restaurant towards upscaling in the near future.



## References

Mealey, L (2019). Why You Need a POS System in a Restaurant. *The balance small business*. < <https://www.thebalancesmb.com/why-you-need-a-pos-system-2888877>>

WTO (April 8, 2020). Trade set to plunge as COVID-19 pandemic upends global economy. World Trade Organization.

<[https://www.wto.org/english/news\\_e/pres20\\_e/pr855\\_e.htm](https://www.wto.org/english/news_e/pres20_e/pr855_e.htm)>

WebstaurantStore (March 14, 2019). Front of House vs Back of House.

<<https://www.webstaurantstore.com/article/5/front-of-house-vs-back-of-house.html>>

Joshi. A & Alkonda. V (2019). Review of Important Measures For Controlling Costs for Running a Successful Restaurant Business. *Atithya: A Journal of Hospitality*, 5(1).

Wong, Brian A. (June 29, 2020) How digital entrepreneurs are accelerating economic recovery after COVID-19 pandemic.

<<https://www.bernama.com/en/thoughts/news.php?id=1854262>>

Saputro, J, Hasibuan, I.,& Octavia, D. (2019). Information System Design Reminder Inventory Control At PT Nuansa Timur Lestari. *Aptisi Transactions On Management (ATM)*, 4(1),49-56.

Paperpile (2021). What is study methodology? <<https://paperpile.com/g/what-is-research-methodology/>>

Kowalczyk, D (September 24, 2021). Writing Study Questions: Purpose & Examples.

<<https://study.com/academy/lesson/writing-study-questions-purpose-examples.html>>

Hartson, R & Pyla, S. P. (2012). Contextual Analysis. *The UX Book*.  
<<https://www.sciencedirect.com/topics/computer-science/contextual-analysis>>

Cavusoglu, M (2019). An analysis of technology applications in the restaurant industry. *Journal of Hospitality and Tourism Technology*, 2(1), 45-72. DOI 10.1108/JHTT-12-2017-0141.

Abel, E., Obeten, E (2015). Restaurant Customer Self-Ordering System: A Solution to Reduce Customer/Guest Waiting Time at the Point of Sale. *International Journal of Computer Applications* (ISSN: 0975 – 8887), 111(11), 19-22.

Williams, W., Simmonds, D (2010). A Case Study In The Design of a Restaurant Management System. *FECS Conference*, 187-193.

Mukwakungu, S.C., Lumbwe, A.K., Niati, D., Mbohwa, C (2019). The Importance of Quality Management System and Leadership in South African Restaurant, Fast Food, and Catering Sector - Case of The Gauteng Region. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 395-406.

Cprime (2021). What is agile what is scrum. Cprime.com.  
<<https://www.cprime.com/resources/what-is-agile-what-is-scrum/>>

PK: An Excel Expert. pk-anexcelexpert.com. < <https://www.pk-anexcelexpert.com/advanced-excel/>>

## Appendices

### Appendix A. List of Questionnaires Interviews

No	Question	Answer
1	Business Ownership	
2	Owner's Age range	
3	Race	
4	Marital status	
5	Owner's Education background	
6	Product selling	
7	Product Brand name	
8	When did you start this business?	
9	How did you start?	
10	Why did you start?	
11	How many years have you been operating in business?	
12	Who is your main target audience?	
13	Local market and/or overseas?	
14	Target Area of selling:	
15	What is the purpose of your business? What is your main drive?	
16	Life Impulse	
17	What are the challenges faced?	
18	Specific challenges can you describe? a) Family challenges? b) Society? c) Financial? d) Other:	
19	How do you overcome these challenges?	

<b>20</b>	Do you go through any failure before establishing (business name)?	
<b>21</b>	Does digital transformation help with the sales?	
<b>22</b>	Do you plan to upscale and expand your business?	
<b>23</b>	If so, what is the problem of upscale and expanding?	
<b>24</b>	Do you plan to make digital transformation as your overall future plan? How?	
<b>25</b>	Who are your competitors?	
<b>26</b>	What is your Future plan?	
<b>27</b>	What is your future Product Plan?	
<b>28</b>	What can you suggest for a better support to get your business upscale? And perhaps minimize the challenges in the future?	

Confirmed by:

\_\_\_\_\_

NAME:

Phone number:

## **Appendix B: Cover Letter for Consent Form**

Subject: Request to Participate in a Doctoral Study

Dear,

I am a student at the Universiti Teknologi Petronas (UTP) working on a Bachelor's Degree in Information Systems (Hons). I am conducting a research study entitled "Restaurant Management System for SME Restaurants". The objective of this current study addresses the factors that the participant's required to sustain their businesses in Malaysia, specifically in the Food and Business industry.

Your participation will entail a one-hour interview in which you will be asked open-ended questions about your experience as a SME restaurant business owner. Due to the Covid-19 pandemic, the interview will be conducted via online video application to safeguard your safety. The time and day will be chosen at your convenience, and the meeting will be transcribed. The transcribed document will be sent to you via email for you to confirm for accuracy and, if desired, amend. The information collected from the interview will be saved on hard drives and backed up on Google Cloud Drive. Your participation in this study is completely voluntary.

The research study's findings may be published, but your real name will not be used, and your results will be kept confidential. The potential benefit of your involvement in this study is that future SME restaurants will benefit from your success. Your participation in this study is greatly valued. To achieve a great conclusion, please submit comprehensive, honest, and accurate responses.

Thank you in advance for your participation.

Sincerely,

Hanis Fuzi

Student of Universiti Teknologi Petronas (UTP)

## **Appendix C: Response to Request**

Please Complete and Return the following to my email below:

To Hanis Fuzi

Email: hanis26fuzi@gmail.com

From: Participant

Participant's Phone Number

Subject: Response to Request to Serve as a Study Participant

Dear Hanis,

I have received your cover letter outlining your dissertation study and inviting me to participate as a study participant. Here is my response:

Please check one:

YES, I will be happy to participate in your research study.

NO, I will not participate in your research study

If you selected YES, please provide the time, day, and online application format (Zoom, Google Meet, Microsoft Teams) by which you like to be contacted to organize the interview. Then before sending the link to the interview, I will confirm the interview date and time through WhatsApp.

Or if you prefer, through email:

Email \_\_\_\_\_

By signing this form, I accept that I am aware of the study's purpose and that my identity will be kept private. My signature on this form also signifies that I agree to participate in the study stated on a voluntary basis.

Signature of Study Participant

\_\_\_\_\_

Typed Name of Study Participant

Date

## Appendix D: Interview Notes

### Interview with Mrs Ju

No	Question	Answer
1	Business Ownership	Mrs Ju
2	Owner's Age range	20 – 48
3	Race	Malay
4	Marital status	Married
5	Owner's Education background	Degree in TESL
6	Product selling	Local food and beverages
7	Product Brand name	Upeh
8	When did you start this business?	I started in August 2019 Wangsa Maju. Then relocated to Sentul in 2020.
9	How did you start?	We started in Sg Petani by opening a small café. Then in 2020 we moved back to KL and open a business in F&B after we were able to secure fund capital from a good friend.
10	Why did you start?	We started as we wanted to venture into business as it is better option of income for the family.
11	How many years have you been operating in business?	2 years
12	Who is your main target audience?	Mainly the residents of Panorama Condominium where the current café is located and minimal target to the locals in Klang Valley.
13	Local market and/or overseas?	Local only
14	Target Area of selling:	Around the Klang Valley and Gombak
15	What is the purpose of your business? What is your main drive?	For the survival of the family. This is our main source of family income.



16	Life Impulse	<p>We desire to expand the business at a proper shop lot because there is a need for demand. We wanted to have our own brand of sauces, market to local and international market.</p>
17	What are the challenges faced?	<p>Our biggest challenge is the location of the café we are at now. We are the only café at the condominium which able to sell food to the resident. Unfortunately, due to the location which is not strategically easy public access. Our café is not suitable and not convenient for public access especially during the Covid-19 pandemic, as the management of the condominium require registration to those wanting to access the café, where visitors must go through and pass the guard inspection etc.</p> <p>Since the target market is limited to the condominium residents, we as owners are unable to expand beyond the condominium and get the local public to purchase our food. Thus, it is limited to 10% - 20% purchased food from the residents daily.</p> <p>Currently, our sales depend on the situation of the Covid-19 pandemic.</p> <p>Another challenge is getting employees during pandemic is not easy. We do have a</p>

		chef before, but they never stay long as they would get better offer outside.
<b>18</b>	<p>Specific challenges can you describe?</p> <p>a) Family challenges?</p> <p>b) Society?</p> <p>c) Financial?</p> <p>d) Other:</p>	<p>1. Customers. Our regular customers are saving up during Covid 19 crisis and most probably on a budget, where they will only order one or two dishes compare to the whole set family meals. This has caused a slash in our income.</p> <p>2. Our limited choice of menu has caused the customers to get easily bored. They requested new menus on regular basis. They also have a variety of options from online marketing platform.</p> <p>3. Ongoing regular new menus. When experimenting with new menu we need to restock the new fresh ingredients but since we have limited storage issue, space, and irregular inventory control, we are unable to do this regularly based on customer demand. Example: Special orders of nasi kerabu Customer need to pre-order earlier so we can accommodate the stock.</p> <p>4. Shortage of employees is another challenging issue as we couldn't hire new staff to work for us due to the lockdown and probably due to the salary as it is not as high as expected by prospect employee.</p>

		<p>5. Limited customer. As our café is nearby swimming pool, on regular day customers having a chat and sit near the pool. We can place 12 to 15 tables but due to the SOP, customers are not allowed to sit due to the lockdown.</p>
<b>19</b>	How do you overcome these challenges?	<p>There are 3 actions we took to overcome the major challenges:</p> <p>1) We create new menus and special new menus</p> <p>2) Encourage the cook to come up with his own specialty type of food/menu. In return we will provide incentives to him for his innovation.</p> <p>3) Provide delivery straight to the customers' home at the condominium.</p>
<b>20</b>	Do you go through any failure before establishing Upeh de cafe?	<p>Yes, during the first restaurant in Sungai Petani then moved to Wangsa Maju. But we did not see this as a failure. As the only issue we failed to analyze was the location as we do not have a strategic location. Furthermore, when we opened, it as was close at the beginning of the pandemic at the end of the year 2019.</p>
<b>21</b>	Does digital transformation help with the sales?	<p>We do not do much in terms of digital transformation for the business.</p>
<b>22</b>	Do you plan to upscale and expand your business?	<p>Yes of course</p>
<b>23</b>	If so, what is the problem of upscale and expanding?	<p>We do not have any additional financial support, additional work force, and suitable</p>

		<p>time. We are also afraid due to previous experience of making losses as we are not in control, we leave the whole operation to the staff. Now we are in control of the kitchen and the cooking. We can focus more on maintaining quality of our food. Thus, it helps us see an improvement in sales although relatively it is still a small profit.</p> <p>We decided we heavily focus on cooking and quality of food offered to the customers. We fully took control of the overall cooking and operations of the café as we do not trust others to know the family recipes as we are afraid that others might steal it. But we still have difficulty in managing our inventory and point-of-sale due to unpredictable customer buying power.</p>
24	Do you plan to make digital transformation as your overall future plan? How?	Yes, only if we have the capacity of financial support.
25	Who are your competitors?	<p>The minimart/mini supermarket at the condominium is our competitor. They encourage customers to cook more often. The customers purchase the raw materials/goods/fresh items from them rather than purchasing cooked food from us.</p>

26	What is your Future plan?	<p>We would like to open another branch, venture into fine dining, and open a farm where we grow our own produce to be used in the restaurant with menus such as smoked beef, BBQ, etc.</p>
27	What is your future Product Plan?	<p>We are looking into bottle and packet sauces, buttermilk sauch which shall all be frozen food items. We wish to have the capacity and space to sell outside the condominium. However, we need to understand the business plan which we do not have any knowledge.</p> <p>We would also like to have additional space/shop lot that will specifically become our central kitchen to accommodate our own future product sauces, frozen item, process product and distribution.</p>
28	What can you suggest for a better support to get your business upscale? And perhaps minimize the challenges in the future?	<p>We need financial support, branding, marketing, packaging, need new knowledge of current digital transformation and support from government agencies to update and upscale our business.</p> <p>We know that we must learn to trust a new person to cook the same quality of food as we are cooking now. But we are still not willing to share family secret recipes with anyone although we would like to follow a similar step that KFC has. Unable to trust anyone.</p>

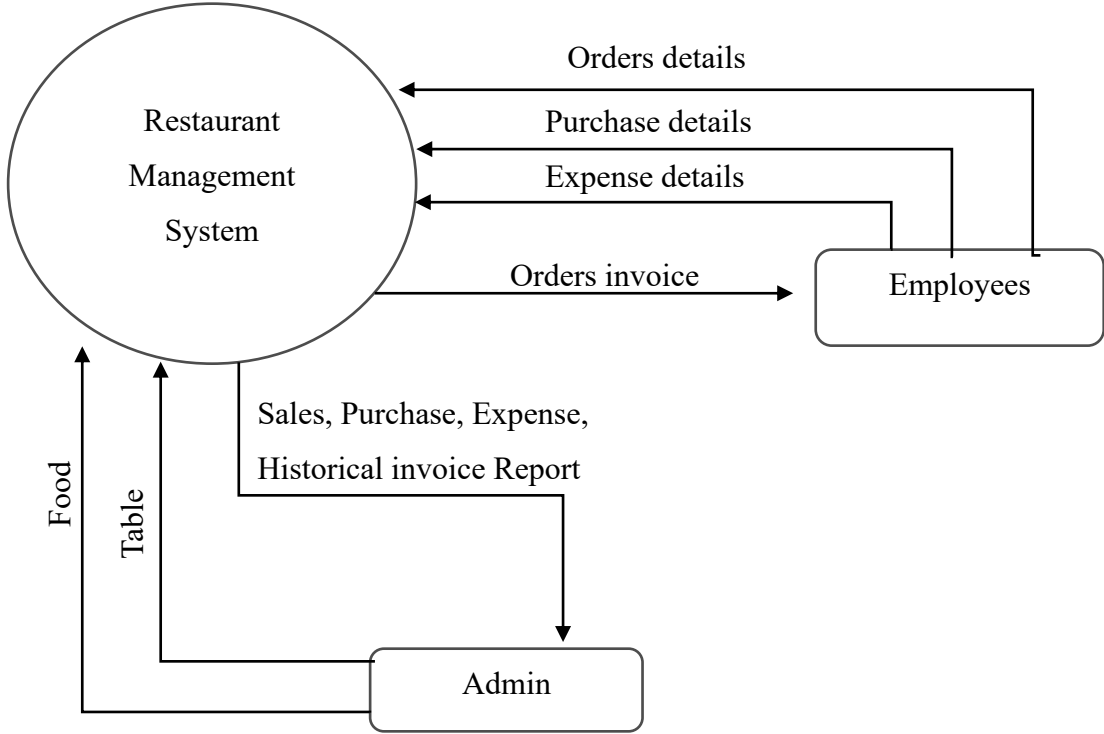
		<p>We need to understand the SOP of everything including menu, preparation according to the unit measurement.</p> <p>We realized that we need help in the overall strategy for expanding, especially through branding, which we need new knowledge.</p> <p>Finally, we need to understand dropship/agent style of e-marketing. Then only we can come out with the recipe on sauce.</p>
--	--	--

Confirmed by:

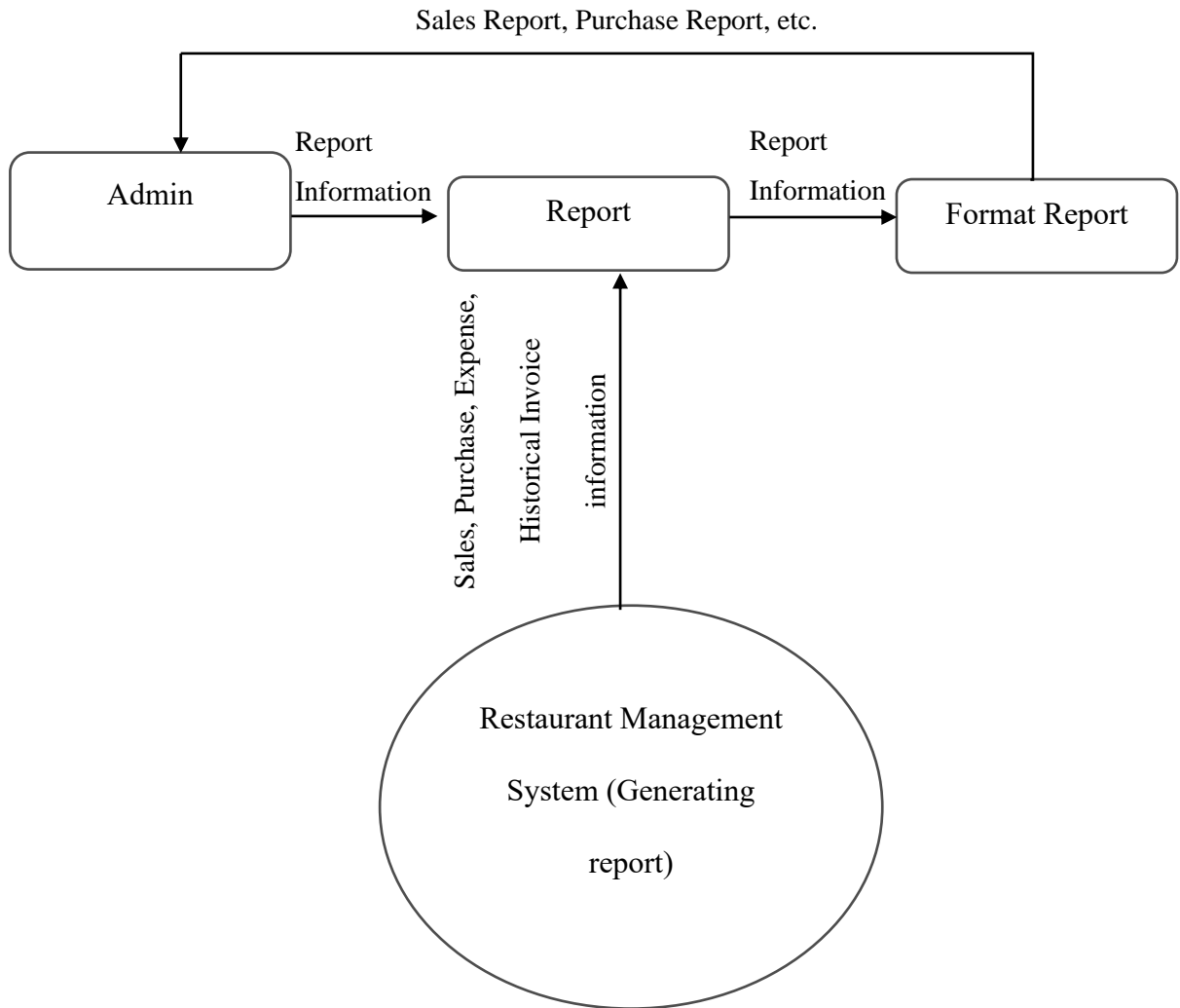
*MAS JUITA* \_\_\_\_\_

Mas Juita

**Appendix E: System Flow of Restaurant Management System 1**

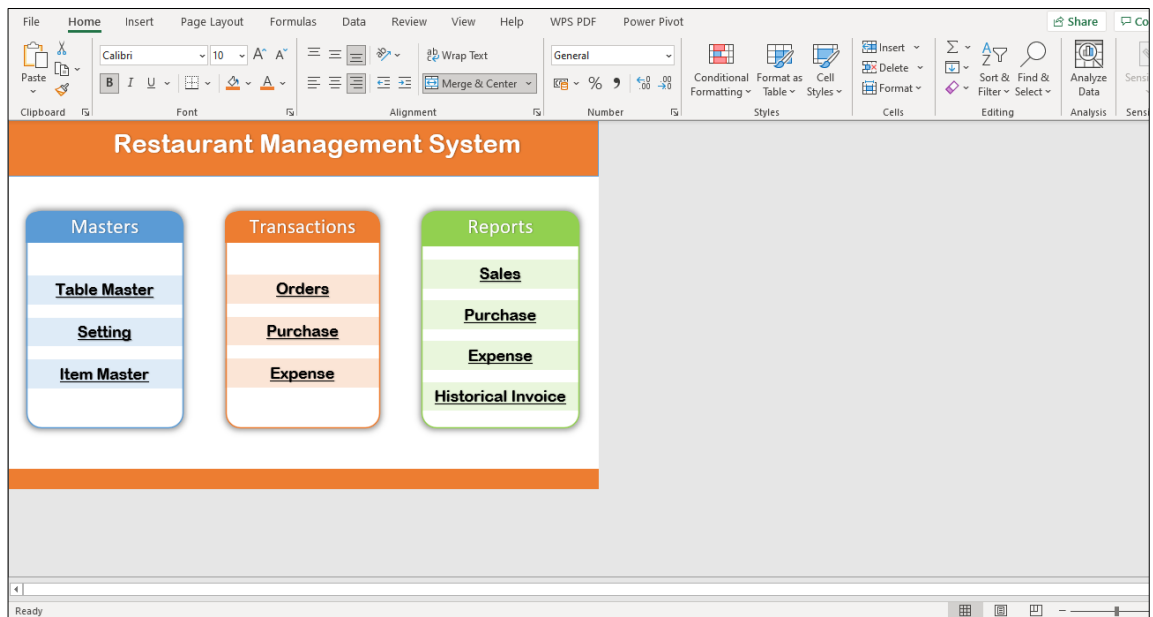


## Appendix F: System Flow of Restaurant Management System 2

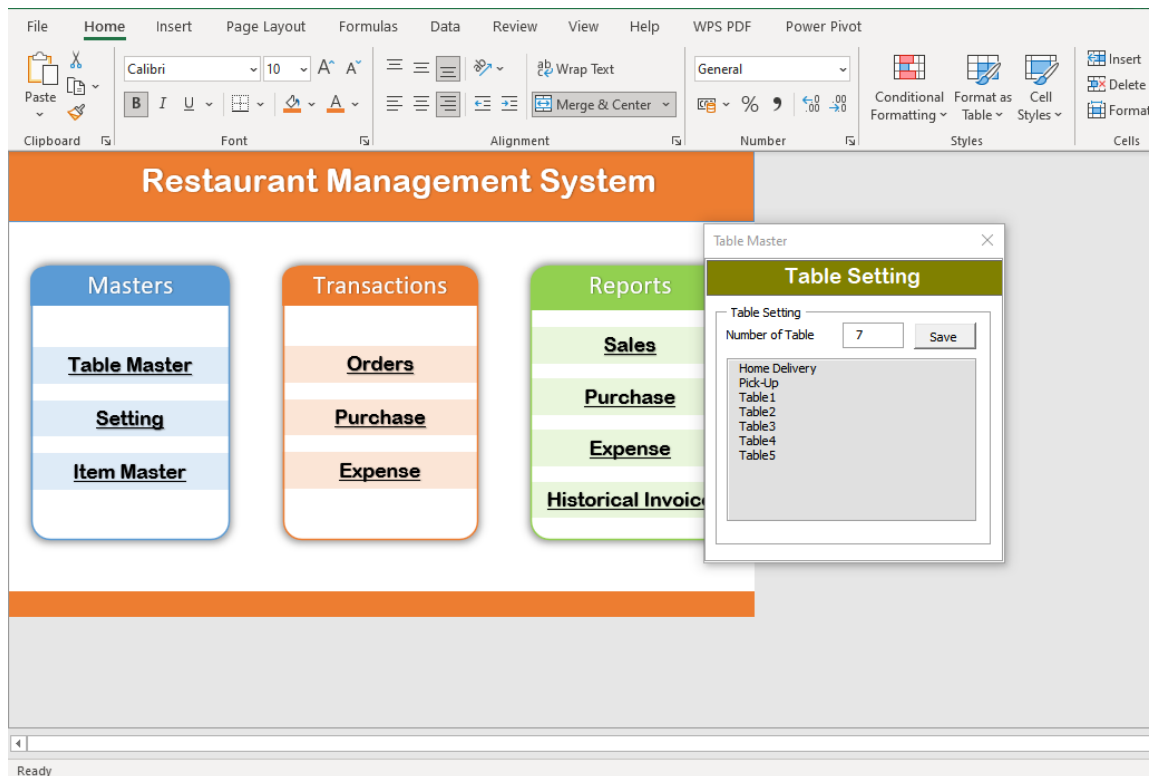




## Appendix G: Restaurant Management Systems Main Dashboard



## Appendix H: Restaurant Management Systems Table Setting



## Appendix I: Restaurant Management Systems Setting

The screenshot shows a WPS Office spreadsheet with the following data:

Drop-down List			Service Tax
Product Category	Purchase Type	Expense Type	6%
Sandwich	Vegetable	Building Rent	
Soups	Flour	Electricity Bill	
Noodles	Others	Staff Salary	
Rice		Furniture Repairing	
Snacky Bites		Others	
Fresh Juices			
Tea & Coffee			
Areated Beverages			

## Appendix J: Restaurant Management System Item Master

The screenshot shows a WPS Office spreadsheet with the following data:

Item Name	Category	Price per Unit	Description
Veg. Noodle Soup	Soups	9	
Chilli Garlic Noodles	Noodles	10	
Pan Fried Noodles	Noodles	10	
Veg. Fried Rice	Rice	9	
Nasi Lemak with Chicken	Rice	10	
Nasi Kandar	Rice	10	
Kampung Fried Rice	Rice	9	
Fries	Snacky Bites	7	
Nuggets	Snacky Bites	7	
Fresh Juices Seasonal/Mix	Fresh Juices	9	
Hot Tea	Tea & Coffee	7	
Coffee Espresso	Tea & Coffee	8.9	
Ice Lemon Tea	Tea & Coffee	8	
Ice Coffee	Tea & Coffee	8.9	
Cola	Areated Beverages	8	
Diet Pepsi	Areated Beverages	8	
Fresh Lime Soda	Areated Beverages	10	
Mineral Water	Areated Beverages	4	

## Appendix K: Restaurant Management System Orders Management

Restaurant Management System

### Restaurant Management System

Order Management

Table #  Date : 24-Nov-2021 Invoice # 3

Item Name   Price  Qty

Invoice Number	Item Name	Price	Qty	Amount
3	Club Sandwich	10	1	10
3	Coffee Espresso	8.9	1	8.9

**Item Count : 2** **Total Amount : 18.90**

## Appendix L: Restaurant Management System Purchase Page

File Home Insert Page Layout Formulas Data Review View Help WPS PDF Power Pivot

Clipboard Font Alignment Number Condition Formatting

	A	B	C	D	E	F
1	Date	Purchase Type	Amount	Description		
2	1-Nov-21	Others	5	Rice 5X10kg		
3	2-Nov-21	Fruit	1	Banana		
4	2-Nov-21	Others	3	whole chicken x3		
5						
6						
7						
8						
9						
10						
11						

## Appendix M: Restaurant Management System Expense Page

The screenshot shows a spreadsheet interface with the following data:

	A	B	C	D	E	F
1	Date	Expense Type	Amount	Description		
2	5-Oct-21	Building Rent	4000	October Rent		
3	5-Nov-21	Building Rent	4000	November Rent		
4						
5						
6						
7						
8						
9						
10						

## Appendix N: Restaurant Management System Sales Report

The screenshot shows a sales report dashboard with the following data:

**Years Filter:** 2021

**Months Filter:** Nov

**Date Filter:** 23-Nov

**Sales Summary Table:**

Years	Months	Date	Qty	Amount
2021	Nov	23-Nov	5	875
2021 Total			5	875
Grand Total			5	875

**Item Name Summary Table:**

Item Name	Qty
Club Sandwich	2
Plain Sandwich	2
Grilled Sandwich	1
Grand Total	5

## Appendix O: Restaurant Management System Purchase Report

**Purchase Report**

Years	Months	Date	Amount
2021	Nov	1-Nov	5
		2-Nov	4
	<b>Nov Total</b>		<b>9</b>
	<b>2021 Total</b>		<b>9</b>
<b>Grand Total</b>			<b>9</b>

Purchase Type	Amount
Others	8
Fruit	1
<b>Grand Total</b>	<b>9</b>

Purchase Type
Fruit
Others

## Appendix P: Restaurant Management System Expense Report

**Expense Report**

Years	Months	Date	Amount
2021	Oct	5-Oct	4000
		<b>Oct Total</b>	<b>4000</b>
	Nov	5-Nov	4000
	<b>Nov Total</b>		<b>4000</b>
<b>2021 Total</b>		<b>8000</b>	
<b>Grand Total</b>			<b>8000</b>

Expense Type	Amount
Building Rent	8000
<b>Grand Total</b>	<b>8000</b>

Expense Type
Building Rent

