Faculty of Computer Science and Information Technology

ASSISTING CUSTOMER FOR PRODUCT PURCHASE USING INTERACTIVE CHATBOT SYSTEM

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Bachelor of Computer Science with Honours

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FREDDY LING HOE CHEE

This project is submitted in partial fulfilment of the

requirements for the degree of

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2019

MEMBANTU PELANGGAN PEMBELIAN PRODUK MENGGUNAKAN SISTEM CHATBOT INTERAKTIF

FREDDY LING HOE CHEE

Projek ini merupakan salah satu keperluan untuk

Ijazah Sarjana Muda Sains Komputer dengan Kepujian

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Fakulti Sains Komputer Dan Teknologi Maklumat

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2019

Declaration

I hereby declare that this thesis is based on my original work except for quotations and citations, which have been duly acknowledged. This thesis has not been accepted for any degree and is not concurrently submitted in the candidature of any other degree.

Name of the student: Freddy Ling Hoe Chee

Date: 10.8.2020

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ABSTRACT

Business is the regular production or purchase and sale of goods undertaken with an objective of earning profit and acquiring wealth through the satisfaction of human wants. (Anuj William, 2019). The ING HING HONG SDN BHD is the main building materials supplier in Sibu and wants to provide better customer service. However, the building material is not a commonly used product for first-time customer. This will cause the customer to lose a lot of money when buying building materials wrongly. With the use of a chatbot, the customer can easily obtain detailed information about the building material product, such as roofing and painting, online without the help of real staff before purchase.

ABSTRAK

Tujuan perniagaan adalah mendapatkan keuntungan dan memperoleh kekayaan melalui kepuasan manusia seperti pembelian dan penjualan barang. (Anuj William, 2019). ING HING HONG SDN BHD adalah pembekal bahan binaan bangunan utama di Sibu dan ingin menyediakan perkhidmatan yang lebih baik kepada pelanggan. Namun, bahan binaan bangunan bukan jenis produk yang mudah difahami bagi semua pelanggan. Pelanggan akan menghadapi masalah kerugian wang apabila membeli bahan binaan bangunan yang salah. Dengan menggunakan chatbot, pelanggan boleh mendapatkan maklumat terperinci tentang produk bahan binaan, seperti bumbung dan cat secara dalam talian tanpa bantuan kakitangan staff.

CHAPTER 1: INTRODUCTION

1.1 Project Title

Assisting Customer for Product Purchase using Interactive Chatbot System

1.2 Introduction

A chatbot is a type of computer program that basically simulates human conversations. It allows a form of interaction between a human and a machine the communication, which happens via messages or voice command. (Jake Frankenfield, 2019)

(Pramod Chandrayan, 2015) also explained the evolution of the Internet and search engine, humans started to find answers for everything imagine possible on Google, but it was not solving all our interest to get things done. Google only managed to give you information but does not lead to a meaningful outcome. This urge to get more things done quickly triggered the development of chatbot.

Business is the regular production or purchase and sale of goods undertaken with an objective of earning profit and acquiring wealth through the satisfaction of human wants." (Anuj William, 2019). Therefore, the contentment of the customer is the main key to business success. The ING HING HONG SDN BHD is the main Building Materials Supplier in the Sibu and it wants to provide better service to the customer.

The ING HING HONG SDN BHD specialized in building material like ZIN metal roofing and accessories, Zintruss, Lipped channel, PVC gutter and accessories, wire, wire mesh, steel bar, BRC, BMC, wire fencing, barbed wire, brick, cement, tiles, Transpaint, flat sheet, plywood, door, lockset, nails, safety shoes, manhole cover, louvres, wheelbarrow, scaffolding and accessories, septic and water tank, sanitary wares, pipe, sink and tank.

However, the building material is not a commonly used product for first-time customer. Some of the building material like roofing and paint normally purchase in large quantity and expensive in price. Next, the purchase of the building material like roofing is depended on the length. The customer needs to measure the actual length and amount of roofing needed before purchase the roofing material. The mistaken purchase in roofing length will be not exchange, returned and refundable from the supplier. It also causes the customer to lose a lot of money when wrongly purchase building materials.

In order to solve the problem of customer lack of knowledge about building material before purchase, the chatbot can give some guide and instruction to the customer. With the use of a chatbot, the customer can easily get the detail information of the building material product like roofing and paint online without the help from real people before purchase. The customer also can get real information about building material without going to the warehouse. It is time-saving for the customer who living far distance with the warehouse.

Furthermore, the chatbot also will provide product purchase recommendation list for the customer. The recommendation list is generated after the interaction between customers with the chatbot. The chatbot will understand the building materials needed for the customer and deliver the recommendation list of the product before the duel with Front Desk Customer Service staff.

In addition, it also can let other new staff without experience can handle the company information and product easily. The new staff actually need to know more about the company information and product than the customer. The new staff also can use the chatbot to have a simple understanding of the company before proper training from the direct leader and human resource officer.

Finally, this project is about an assisting Customer for Product Purchase using Interactive chatbot System (Figure 1.1). The chatbot is accessed through a web-based system. The customer can browse it at any time and at any place.

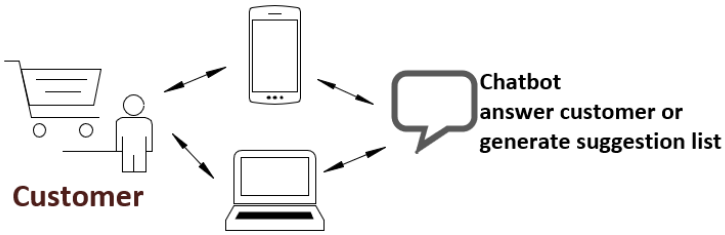

Figure 1.1: The proposed system diagram

1.3 Problem Statement

Customer service is the most important aspect of the business. The ING HING HONG SDN BHD Front Desk Customer Service staff always busy with the walk-in customer and phone-calling customer at the same time because of the lack of trained staff. Next, they also need to explain the use of building material product and suggest suitable building material after understanding the need of the customer. The company need to spend more resource to train the professional and experienced trained staff who can assist more customer at the same time. The suggestion from staff before the purchase can reduce the number of customers buying the wrong thing but it is time-consuming for each customer. The standard operating procedure process of exchange or return the purchased product also wasting more time. The Inventory management staff also need to check the status of the product to ensure the product is qualified to make exchange or return. The time, cost for training new employees and the process of purchase the building material is not a simple matter in a short time.

1.4 Objectives

The main objective of the project is to design and develop a product purchase recommendation system using interactive chatbot.

Other objectives include:

1. To extract key processes of product recommendation for building materials.
2. To provide product recommendation as an outcome from the chatbot interaction.
3. To design and develop the web-based components of the system for creating a new record, retrieving the existing record, updating and deleting an existing record.

1.5 Brief Methodology

Rapid application development is the methodology of the system development of the assisting customer for product purchase using interactive chatbot system project. According to (Amir Ghahrai, 2018), rapid application development Model is a “try before you buy” approach to software development. The rapid application development allows end-user to give better feedback when testing the system compare with working strictly with documentation.

1.5.1 Analysis and Quick Design

In the analysis and quick design phase, planning needs to determine problem statement and the objectives of the proposed system. Then, analysis and figure out the requirement will be obtained by interview and questionnaire. The collected data will go through the requirement analysis through visualization of data in graphical form.

Next, the quick design will clearly understand the system requirements. The estimated project timeline, excepted outcome, logical design and physical design will be produced in this phase. In logical design, conversation flow diagram, use case diagram, the flowchart can be helpful in designing the flow of the system development. On the other hand, the physical design will focus more on the design of the user interface and user experience of the system development.

1.5.2 Prototype Cycle

In the prototype cycle, the process of the build, demonstrate and refine will continuous repeating until the satisfaction of the user is achieved. After the objectives and requirement are stated clearly, the building functional models are started. In additions, the process of the building functional models might imperfect for the first time, but it will get improvement by repeating in the prototype cycle.

In demonstrate phase, the user providing feedback, ideas, and suggestions to let the developer modified and improve the prototypes. The new requirement allowed added by the user in this phase and the developer need to improve the project to fulfil all the requirements.

Furthermore, refine is also an important phase in this cycle. The developer needs to make changes to improve or define the project. Next, the developers also allowed to remove the unused feature or design which is not required. The prototype cycle will keep repeating until the refinement is acceptable.

1.5.3 Testing

When the prototype cycle is completed, the testing phase will continue testing the system. As the prototype cycles already tested successfully. The testing phase will be short and potential problems will reduce. However, the testing phase still needs continuous to proceed to test the information flow and the intersection between the components.

1.5.4 Implementation

In the implementation phase, the product was finished and ready to launch. The implementation phase includes the testing, changeover, data conversion and user training to the product. After all the final checking and changing are made, the developer and user will continue to look for bugs in the product.

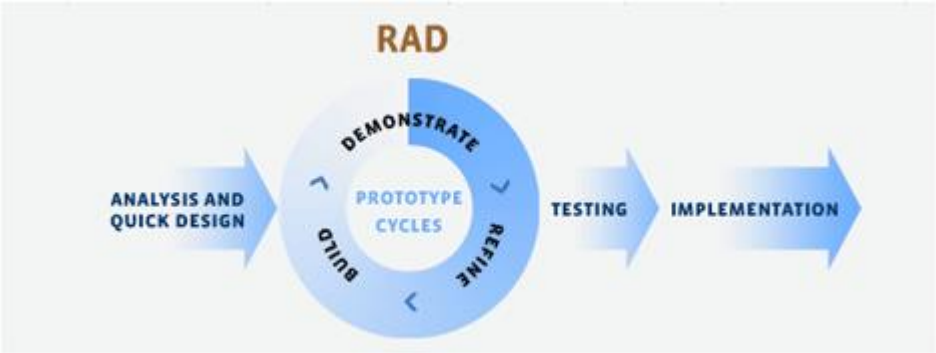

Figure 1.2: Rapid application development (RAD)

1.6 Scope

The scope of the project has been outlined and listed below:

- This system is targeting customer and staff who want to purchase or understanding the building material from ING HING HONG SDN BHD company.

- The system allows customer interaction with the chatbot.
- The system reduces the workload of front-end customer service staff.
- The system will allow the user to have interaction with chatbot anytime and anywhere.
- The system provides a simple understanding of company information and product to the new staff.

1.7 Significance of the project

The significant of this project is to assisting customer for product purchase using interactive chatbot system. Thus, this project able to help customer and business owner:

- To help the customer understand the information about building material product.
- To provide customer product recommendation after interaction with the chatbot.

1.8 Project Schedule

Project scheduled is consists of a list of a project's terminal elements with intended start and finish dates. The development and maintenance of a project schedule are important as a guide for the developer or the researcher to finish the tasks on time and develops the project inconsistent way. A project schedule has been created by using Microsoft Project 2019 as the software tools to complete the Gantt chart in order to bring the project to be delivered successfully. Start dates and finish dates are set to each task from 16 September 2019 for FYP 1 until 8 May 2020 as the submission date for FYP 2. Figure 1.3 is the Gantt chart of the proposed project:

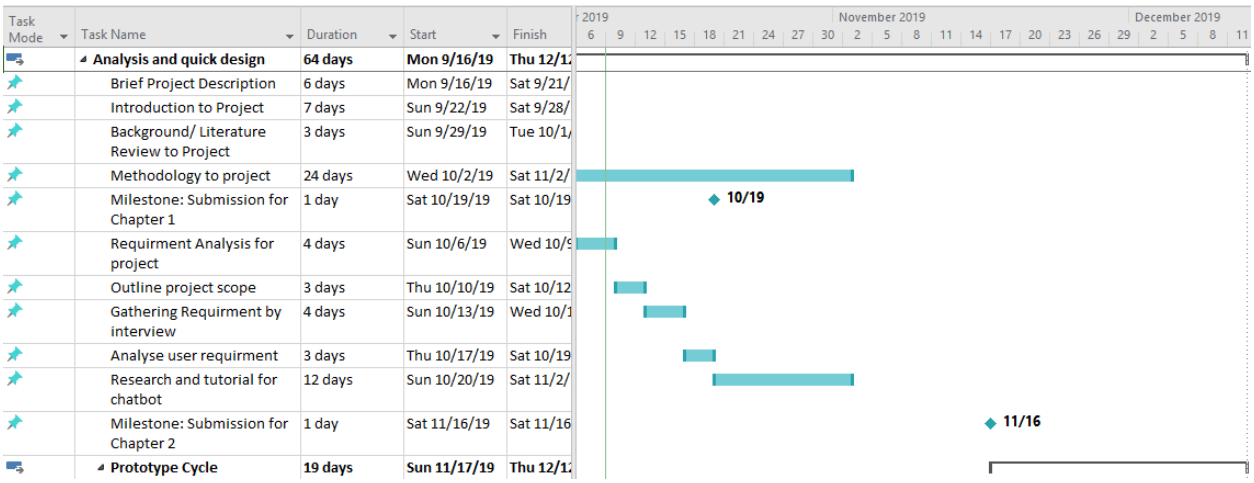

Figure 1.3: Gantt chart of the proposed system

1.9 Expected Outcome

The main outcome of the project is a system that allows the customer to interact with the chatbot on the information and details of the building material at any time and anywhere.

1.10 Project Report Outline

1.10.1 Chapter 1: Introduction

In Chapter 1, the introduction and description of the proposed project are let the reviewer a clear understanding of the proposed system to be developed. Chapter 1 contains an introduction, problem statement, objectives, methodology, project scope, the significance of the project, project schedule and expected outcome. In the project problem statement section, the current problems faced by the company want to give better service being described. On the other hand, objective describes the aim of the proposed system and gives an appropriate idea about how the proposed system can help to solve the current problems facing. The methodology describes the type of methodology used to develop the proposed system, which is rapid application development.

1.10.2 Chapter 2: Literature Review

Chapter 2 discusses the review done on the existing methods or similar system on the market. All the thing can refer based on the articles, journals and conference papers online or at the library. This chapter also provides a clear view of the proposed system. Next, the limitations and scope of the existing system is mentioned and discusses in this chapter. Several suggestions and guidelines can be found in this chapter.

1.10.3 Chapter 3: Requirement Analysis and Design

Chapter 3 mentions and discusses more the methodology to be used in the proposed system. The methodology that will be applied is rapid application development. This chapter also discusses the methods to obtain user requirement and analyze the information obtained to useful information. After the user requirement analysis, the design for the proposed system, the conversation flow diagram, use case diagram, the flowchart will be shown in this chapter.

1.10.4 Chapter 4: Implementation and Testing

Chapter 4 discuss the implementation to take place in the proposed system. Besides, the design layout of the proposed system will be decided. So, the structure of the proposed system can show easier to understand. Also, the importance of testing in developing a proposed system or software is being discussed in this chapter.