CHAPTER IV
RESEARCH METHODS

4.1 Research Flow

The research method used in this internship would be classified as applied research. It is said in an article by Verhoeven, (2015) that applied research is all about solving problems that have a practical application. Thus; by using this type of research in this internship, it aims to find a solution to an immediate problem faced by PT. Batam Layer Cakes regarding system design and implementation of a fully functioning sales and management inventory system.

4.2 Data Gathering Methods

The method that is used in data collection is an interview. An interview is a type of data collection method in which a practical conversation is done between an interviewer and interviewee to produce knowledge (Brinkmann, 2014). In order to better understand the problems faced by PT. Batam Layer Cakes, the interview would be conducted between its manager and us. The interaction would be carried out via social media chat. The questions involved are as below:

1. What types of products/services do you offer?

2. What problems do you have with the previous system?

3. Are there any preferences regarding the input style and design format?

4. What problems do you try to solve with the new system?

After all the questions above have been answered, and the problems are identified, then the design process would begin.

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4.3 Design Process

Figure 2 below is a chart showcasing the general design process from planning to implementation of the sales and inventory management system.
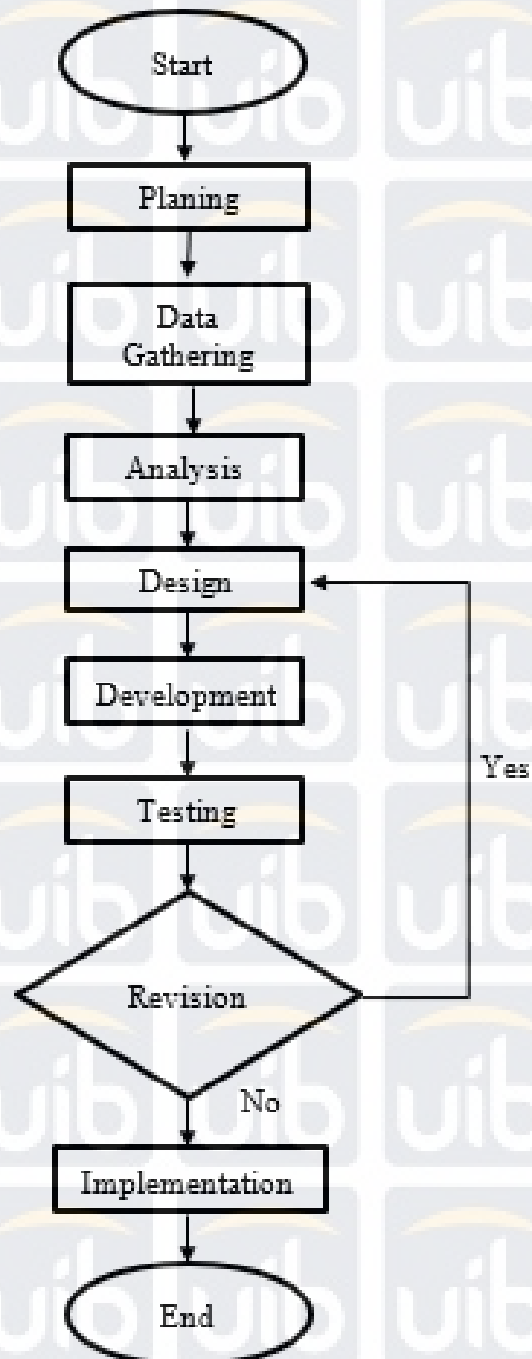

Figure 2 Design Process

4.3.1   Planning

First, the writers would define and schedule the steps required to develop the system. From interface design, algorithm, database design to actual implementation.

4.3.2   Design Process

Interview as the chosen data gathering method will be conducted before the development phase, the knowledge acquires from the interview will serve as the fundamental requirements for the development process. Data gathering is done for the purpose of acknowledging the existing problem that PT. Batam Layer Cakes tries to solve by replacing the new system with the existing one. Along with the input and expected results.

4.3.3   Analysis

An analysis is required for cultivating existing business flow to the system's algorithm that would be useful in developing sales and inventory management system. With the consideration of future expansion, a thorough analysis is highly demanded. Which in this project, the writers would like to use fishbone analysis by determining the root problems into categories and solving them respectively.

4.3.4   Design

For the design process, the writers take input style preferences into consideration to provide a better user experience in designing interface. As for the color scheme, it will be decided by PT. Batam Layer Cakes' manager. The database design would be illustrated by ERD (Entity Relationship Diagram) and followed by Activity Diagram and UCD (Use Case Diagram) respectively.

4.3.5   Development

In the development phase, the sales and inventory management system would be developed by using VB.Net programming language and MySQL as a relational database management system. DevExpress would be used to assist the writers for an easy design process and fast development. As for Integrated Development Environment, the writers would choose Visual Studio 2017. Instead of MySQL Workbench, dbForge Studio For MySQL by Devart is used as the database management tool.

4.3.6   Testing

Followed by initial development, the writers would continue to the testing phase, where the combination of white and black box testing is used. This type of testing called grey-box testing, it gives the benefits of both white and black box. This technique could be performed by testers, developers and end-users. And it doesn't require as much time as white box testing needs. (Tauhid Ullah Shah, Johar, Shah, & Khan, Jan, 2016).

4.3.7   Implementation

The final phase of the development would be system implementation. In this phase, the sales and inventory management system would replace PT. Batam Layer Cakes' existing system as its main information system for business activities.

4.4 Timeline

The arrangement for the development process would begin in the month of February 2019 until May 2019 as listed in Table 2.

Table 2
A timetable showing the development timeline

	Feb	March	April	May
Data Gathering				
Planning				
Development				
Testing				
Implementation				