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**DESIGN, DEVELOPMENT, AND  
IMPACT OF A RESTAURANT WEBSITE  
FOR SAIGON SANDWICH BAKERY**

Bachelor's thesis

Information Technology

Bachelor of Engineering

2023



**South-Eastern Finland  
University of Applied Sciences**

Degree title	<a href="#">Bachelor of Engineering</a>
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Thesis title	Design, Development, and Impact of a Restaurant Website for Saigon Sandwich Bakery
Commissioned by	-
Year	2023
Pages	40 pages
Supervisor(s)	Brotkin Heikki

## ABSTRACT

The purpose of this thesis is to explore the design and development of restaurant websites, utilizing React and JavaScript. The main goal of the project was to enhance the bakery's digital presence and improve customer engagement by creating an online platform.

The thesis begins by explaining the basic theories of web development, tools and frameworks used for this project. These tools and languages, namely React and JavaScript, are introduced, with a focus on their inherent advantages, showcasing their pivotal role in shaping the project's success.

Furthermore, the thesis will delve into the restaurant owners' opinions and perspectives for a website. It aims to uncover the desires and expectations of customers who will interact with this online platform.

Finally, the thesis delves into the website development, what difficulties were encountered as well as valuable lessons learned during the website implementation process.

**Keywords:** React, JavaScript, restaurant website, web development, user experience (UX)

**GitHub Repository:** <https://github.com/Kudoo39/restaurant-app>

**Official Website:** <https://banhmisaigon.netlify.app/>

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## 1 INTRODUCTION

In today's digital age, with technological advances and the development of the Internet, businesses have also realized the importance of reaching customers and interacting with them via the Internet.

Saigon Sandwich Bakery is a small and cozy diner that many have heard of. However, many customers still have very vague ideas about the place. That is the reason why a website was created to help approach all potential customers.

The main goal of the thesis is to conceptualize, design, and develop the Saigon Sandwich Bakery restaurant website. The aim is to create a user-friendly website that offers a seamless user experience across all devices through responsive design. In addition, the website also enhances the user experience with features to explore menus and history, as well as send feedback to get more opinions from different customers.

Through this thesis, it will provide insights into the design and development of a website, as well as the technologies employed. In addition, it examines creating a restaurant website that suits the needs of Saigon Sandwich Bakery.

The structure of this thesis will be divided into 5 sections.

In the introduction section, it briefly introduces the restaurant website, providing an overview of the thesis as well as outlining the research objectives.

The second section is the theoretical background, this will explain the foundational concepts and technologies relevant to the project. Conveying these concepts concisely provides adequate necessary knowledge for understanding the implementation choices.

In the implementation section, the thesis will detail the process of designing and developing a restaurant website, including a comprehensive walkthrough of

project planning and requirements from both the company's and end-users' perspectives.

The next section discusses the results section, the website outcome will be described, the finalized website will be showcased, and its features and functionalities will be demonstrated. Also, the challenges and difficulties throughout the project will be discussed.

The last section is the conclusion and it will summarize the outcome and achievements of the thesis project, as well as the value that the project brings to the company.

## **2 THEORETICAL BACKGROUND**

The theoretical foundation will provide all the necessary information to understand the project presented in this thesis. In this section, the web technology, basic JavaScript theories, and the significance of the React framework will be learned. All the above will give us an overview of the tools as well as their concepts.

### **2.1 Web Technologies Overview**

A scientist named Tim Berners-Lee proposed the World Wide Web in 1989, envisioning it as a "universal linked information system" to meet the need for information sharing among scientists. He began developing the World Wide Web, marking a significant milestone in the history of technology and communications. (Wikipedia, 2023a; CERN, n.d.)

In 1990, the first web server was launched, alongside the development of the first web browser which was "WorldWideWeb". To avoid confusion, it was later renamed "Nexus." Additionally, the document formatting protocol Hypertext Markup Language (HTML) was developed and it played a key role in the development of the web. (CERN, n.d.)

After that, the HTML markup language was published, and the source code for the web browser was made available to the public. This openness resulted in the development of numerous other web browsers and the rapid expansion of the World Wide Web. (Wikipedia, 2023a.)

Until now, web technology continues to develop and fulfil the requirements of users with the adoption of web standards such as HTML5 (Hypertext Markup Language 5), CSS3 (Cascading Style Sheet level 3), and ES6 (ECMAScript 6 or ECMAScript 2015).

Regarding the importance of web development, it assists businesses in reaching out to potential clients. Nowadays, using the web is extremely necessary for businesses. In addition to businesses reaching customers, customers are also able to reach and learn more about businesses through websites (Fifteen Design, 2022). According to Fifteen Design (2022), "It's a way of building relationships with customers."

Design is also very vital in website development, an unappealing website will leave a bad impression on customers and make them unwilling to visit the store. On the other hand, a beautiful website will make customers feel more excited. In addition, it also helps businesses stand out from their competitors. Businesses that do not keep up with web technology will be phased out of the game, or their customers will forget them (Fifteen Design, 2022.). Big brands in the world today will also invest partly in web development.

Web development includes a wide array of different technologies and components, both on the user's end and on the server's end. By grasping all these concepts, one can gain a profound understanding of the complexities of web development.

On the user's end, HTML, CSS, and JavaScript serve distinct roles in web development.

HTML is a fundamental markup language used to structure web content, defining the layout and content of a web page. (FreeCodeCamp, 2021)

CSS is the language employed for styling websites, enabling developers to create style and format to make the website more pleasing and user-friendly (AppMaster, 2023). In addition, CSS also helps developers control HTML elements, change color, fonts, margins, padding and more.

JavaScript is a widely used programming language that can enhance the interactivity and dynamic behavior of web pages. (Wikipedia, 2023b)

## **2.2 JavaScript Fundamentals**

JavaScript is a programming language that can make websites more interactive and dynamic. As mentioned above, it is widely used by programmers. According to Wikipedia (2023b), “98.7% of websites use JavaScript on the client side for webpage behavior, often incorporating third-party libraries.” JavaScript supports almost all modern web browsers on both computers and mobile devices, making it an essential language for web development. (Wikipedia, 2023b)

### **2.2.1 Basic JavaScript Concepts**

JavaScript uses variables to store and manage data. These variables could be different data types, including strings, numbers, and booleans. Here are how variables can be declared:

```
let restaurant = "Saigon Sandwich Bakery";  
let rating = 9.8;  
let opening = true;
```

A function is a block of code that performs a specific task, which takes inputs, processes them, and then produces output. Functions are encapsulated making them reusable. Here is how a function can be declared (W3Schools, n.d.a):



```
function welcome(name) {  
  return "Welcome to Saigon Sandwich Bakery, " + name + "!";  
}
```

Also, In ES6, a function can be declared as below:

```
const welcome = (name) => `Welcome to Saigon Sandwich  
Bakery, ${name}!`;
```

Objects are collections of key-value pairs, and arrays are ordered lists (Snow, 2019). Both can be used to structure data:

```
const menu = {  
  name: "Saigon Grilliliha",  
  price: 7.95,  
};
```

```
const menus = ["Saigon Grilliliha", "Härkä Satay Chili",  
"Original Patee"];
```

### 2.2.2 DOM Manipulations

DOM stands for Document Object Model, and according to W3Schools (n.d.b), "The W3C Document Object Model (DOM) is a platform and language-neutral interface that allows programs and scripts to dynamically access and update the content, structure, and style of a document." With DOM, we are able to access and modify HTML elements with JavaScript.

JavaScript is a powerful programming language that can interact with DOM, HTML and CSS which help us create dynamic and interactive websites to improve user experience.

## 2.3 React Framework Essentials

React is a very popular JavaScript library for building user interfaces, known for its efficiency, reusability, and flexibility (Abramov & Nabors, 2023).

### 2.3.1 Introduction to React

React was developed by Facebook developers and it is widely used for creating interactive and dynamic web applications (Konduru, 2023). React breaks down the user interface into reusable building blocks called "components". This allows developers to efficiently manage and maintain their code, which makes web development easier for developers.

### 2.3.2 Key Features

One of the most distinctive features of React is virtual DOM, designed to improve both performance and efficiency (Onviga Inc, 2023). The virtual DOM is a lightweight presentation of the real DOM model, allowing changes to be made to virtual DOM instead of the real DOM. This means that developers can update the user interface without the need to reload the entire page, significantly enhancing the user experience. (Gorman, 2023.)

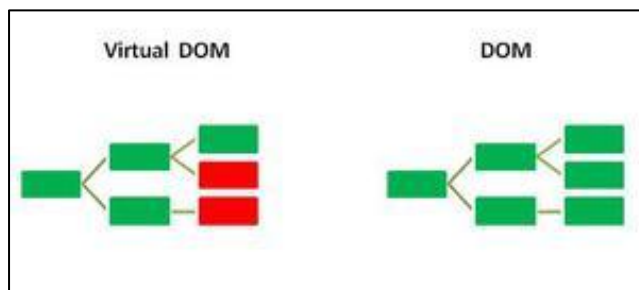


Figure 1. Virtual DOM vs. DOM (GeeksforGeeks, 2023)

According to GeeksforGeeks (2023), "In the above-shown figure, when the whole virtual DOM has updated there is a change in the child components. So, now DOM finds the difference and updates only the changed part."

React primarily utilizes JavaScript as its core programming language, but it also incorporates JSX as an extension. JSX stands for JavaScript XML. According to W3Schools, “JSX allows us to write HTML elements in JavaScript and place them in the DOM without any `createElement()` and/or `appendChild()` methods.” It enables us to write HTML in React, making it extremely convenient (W3Schools, n.d.c). In addition, JSX makes it simple to define the structure of the components, which make the code easier to read and maintain.

As mentioned above, React divides the web page into "components". Each component encapsulates its own distinct user design interface. This component-based model is a fundamental concept in React, which allows developers to create modular and reusable user interfaces and make it easier to manage and run web applications. (GeeksforGeeks, 2023.)

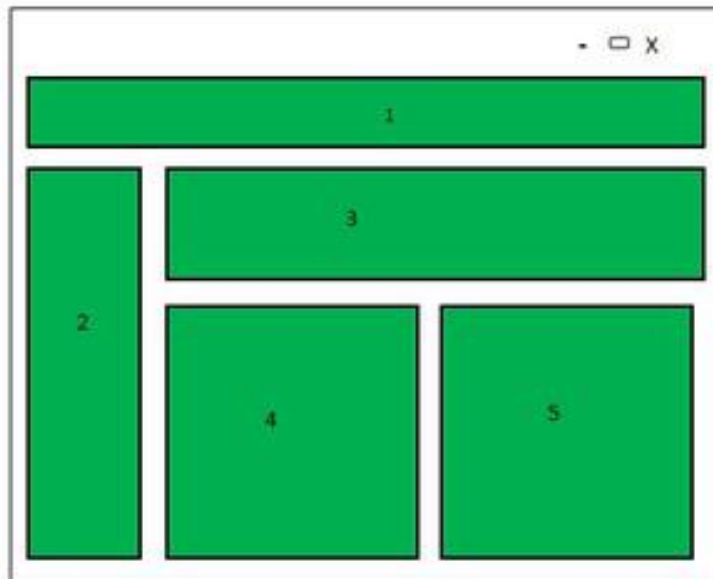


Figure 2. Multiple components (GeeksforGeeks, 2023)

## 2.4 Git Version Control System

### 2.4.1 What is Git?

Git is one of the most popular version control systems today, which record all changes made to code in a special database called repository (Programming with

Mosh, 2020). Developers can use another computer to clone the entire project and continue working on that project through Git.

### 2.4.2 Basic Git Commands

To start using git, a repository can be initialized in the project folder using `git init`. (Git, 2023)

Files to be staged can be added by providing their filenames, like this: `git add filename.txt`. All changes can also be added using a period as a parameter: `git add .`. (Git, 2023.)

A commit can be made with a message when the changes are staged using `git commit -m "Here is the message"`. (Git, 2023)

`git status` can be used to check the status of the repository. (Git, 2023)

Once the changes are committed, we can use `git push` to store them in a remote repository. (Git, 2023)

These basic Git commands allow users to track changes, collaborate with each other effectively, and maintain the project development.

## 3 IMPLEMENTATION

### 3.1 Project Planning and Requirements

Before starting any project, it is critical to properly understand the goals and requirements of the project. In this section, the specific project planning process will be explored, as well as both the company's perspective and the needs of the end users.

### **3.1.1 Company Perspective**

From the company's point of view, Saigon Sandwich Bakery is a place offering the finest Vietnamese cuisine in the region. The primary goal with this project is to create an online presence for the restaurant. Providing customers with an easier way to access the restaurant, they can view the menu, opening hours as well as learn more about the restaurant's services. The company wants to create a place where customers can easily find information and connect with the restaurant, a place where customers can come anytime.

### **3.1.2 End User Perspective**

Understanding the perspectives and desires of end users is critical in developing a user-friendly website based on user-centered principles. Customers will want a user-friendly website that meets all their requirements. They will expect the website to provide all necessary information such as working hours, and to order food. Furthermore, responsive website design is important in improving user experience. While walking down the street, most customers will use their phones to look for a restaurant. Customers will be satisfied if a restaurant website is designed to be compatible with all devices, including desktop, laptop, and mobile devices.

### **3.1.3 Project Goals and Objectives**

The website was developed to convey the brand value of Saigon Sandwich Bakery. And to ensure responsive web design to enhance user experience on many different devices. Additionally, the aim was to provide an online menu that includes prices and details about dishes. Trying to create a nice website to attract users to the restaurant and increase the company's revenue. The website has a user feedback system to gather insights and continuously improve the website, with the aim of increasing user satisfaction.

### **3.1.4 Plan for Maintenance and Support**

Website maintenance helps ensure that website runs smoothly and keeps customers satisfied. The website will be checked and updated on a regular basis by both the company and developer to address any issues that occur. If more people start using the site, it will be guaranteed to upgrade to accommodate the increased traffic.

During the website downtime, ensuring user experience is necessary. The company will use social media to inform customers of the real-time status updates and actively work on mitigating the website as soon as possible. In addition, for those who want direct support, they can contact by phone or email to receive the assistance.

## **3.2 Project overview**

The website was divided into 5 sections.

Menu section will introduce about the restaurant's dishes with neatly arranged images including detailed information and prices.

Order section helps customers connect with third-party food delivery platforms such as Wolt or Foodora, helping customers place orders when it is not convenient to go to the restaurant. There is also additional information such as opening hours to let customers know what time they can order food.

Home section will show general information about the restaurant, Banh Mi dishes and also some positive customer feedback about the restaurant.

About section will provide detailed information about the restaurant's history and establishment. The restaurant's footprints will be expressed to bring a special impression to customers.

Contact section is a place where customers can give their feedback or reviews to improve the quality of products in the future.

### **3.3 Design and Development**

After learning about the fundamental theoretical foundation and considering the viewpoints of both the restaurant company and its end users. This section will discuss about the process and methods used to create for the restaurant's website.

#### **3.3.1 Wireframing and Mockup Prototyping**

Developing a traditional website typically includes a structured design phase, including creating wireframes and mockup prototypes. These designs play an important role in building a website and are also a support tool in the development process, leading to extreme efficiency as well as saving time and effort.

In contrast to the typical approach to website development, the development for Saigon Sandwich Bakery takes a dynamic and iterative approach. That is, the construction of the website had no specific plan from the beginning, was not unified, and was built spontaneously.

The absence of comprehensive planning and the omission of wireframe and mockup prototypes had significant implications for the development process. Without a clear direction, the website took a lot of time and effort, not knowing what to do next or what to build. Consequently, a valuable lesson was learned that before building a website, it is crucial to plan carefully as well as build a wireframe. Similar to building a house, it is critical to have a plan and prepare technical drawings before building.

#### **3.3.2 Development with JavaScript and React**

Create React App (CRA) and Vite are both popular tools for building web applications. I personally prefer using Vite because Vite is known for its fast

development experience. Creating a project using Vite will be much faster than using create-react-app.

To start a project, create a new folder, then go in that folder and right-click, click on Git Bash Here. Then, a new Git Bash terminal appear.

A screenshot of a Git Bash terminal window. The title bar shows the path "MINGW64:/c/Users/npdkh/Desktop/restaurant". The terminal content shows the prompt "npdkh@LAPTOP-GETF3CN1 MINGW64 ~/Desktop/restaurant" followed by a dollar sign "\$" and a vertical bar "|" indicating the cursor is ready for input.

Figure 3. New Git Bash Terminal

Figure 3 shows a new Git Bash terminal after clicking on Git Bash Here. Here, we can use "npm create vite@latest" to create a new project.

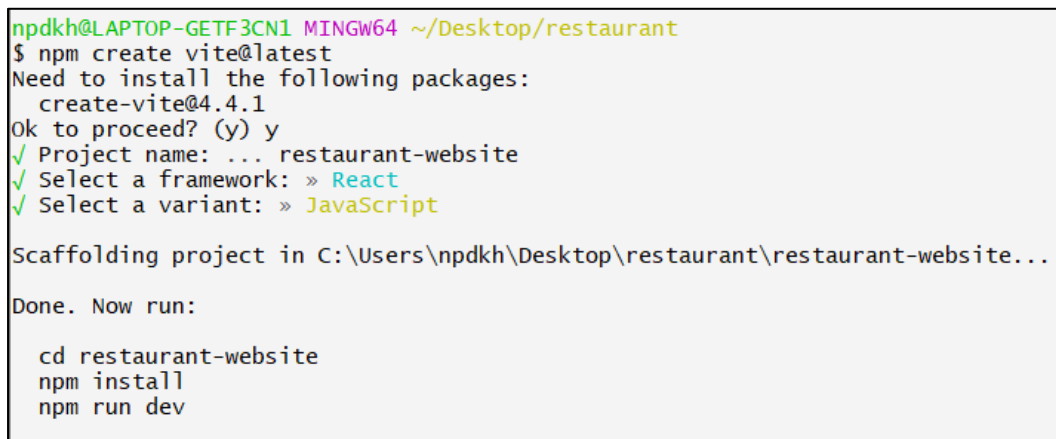
A screenshot of a Git Bash terminal window showing the execution of the "npm create vite@latest" command. The terminal output includes: "Need to install the following packages: create-vite@4.4.1", "Ok to proceed? (y) y", "Project name: ... restaurant-website", "Select a framework: » React", "Select a variant: » JavaScript", "Scaffolding project in C:\Users\npdkh\Desktop\restaurant\restaurant-website...", "Done. Now run:", and a list of commands: "cd restaurant-website", "npm install", and "npm run dev".

Figure 4. Creating the React Application

Figure 4 shows how the process of creating a project looks like. After using "npm create vite@latest" command, it will ask the project name, after which you select a framework and select a variant. This project will use React and JavaScript.



```

npdkh@LAPTOP-GETF3CN1 MINGW64 ~/Desktop/restaurant
$ cd restaurant-website

npdkh@LAPTOP-GETF3CN1 MINGW64 ~/Desktop/restaurant/restaurant-website
$ npm install

added 266 packages, and audited 267 packages in 1m

97 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities

npdkh@LAPTOP-GETF3CN1 MINGW64 ~/Desktop/restaurant/restaurant-website
$ code .

```

Figure 5. Running Commands

Figure 5 shows all commands that should be run after successfully creating the project. Firstly, use `cd restaurant-website` to navigate to the project just created. Use `npm install` to set up the required dependencies and install node\_modules. `code .` to open Visual Studio Code for this React project.

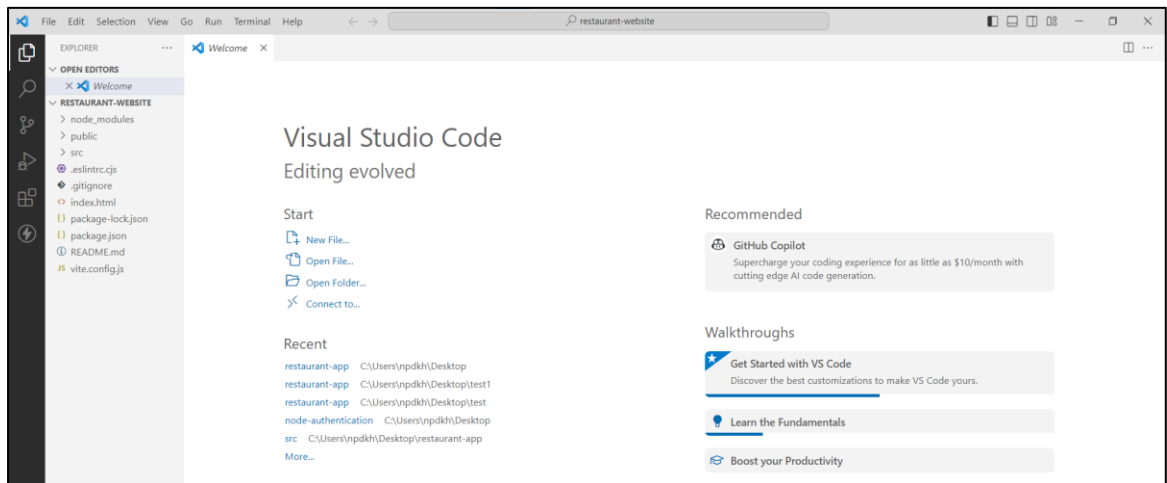


Figure 6. Visual Studio Code Interface

App.jsx file represents the core structure of the React application. All components of the website are gathered here.

```

src > App.jsx >
1  import React from "react";
2  import { HashRouter as Router, Route, Routes, Navigate, } from "react-router-dom";
3  import Header from "../components/Header/Header";
4  import Nav from "../components/Nav/Nav";
5  import Home from "../components/Home/Home";
6  import Menu from "../components/Menu/Menu";
7  import About from "../components/About/About";
8  import Contact from "../components/Contact/Contact";
9  import Hour from "../components/Hour/Hour";
10 import Footer from "../components/Footer/Footer";
11 import Chat from "../components/chat/Chat";
12 import { useTranslation } from "react-i18next";
13 import "bootstrap/dist/css/bootstrap.min.css";
14 import "./App.css";
15
16 const App = () => {
17   const { i18n } = useTranslation();
18   return (
19     <Router>
20       <Nav />
21       { /* <Header /> */ }
22       <Chat key={i18n.language} />
23       <Routes>
24         <Route path="/" element={ <Menu /> } />
25         <Route path="/home/*" element={ <Home /> } />
26         <Route path="/about/*" (property) element: React.JSX.Element />
27         <Route path="/contact/*" element={ <Hour /> } />
28         <Route path="/hour/*" element={ <Hour /> } />
29         <Route path="*" element={ <navigate to="/" /> } />
30       </Routes>
31       <Footer />
32     </Router>
33   );
34 };
35
36 export default App;

```

Figure 7. Core Structure of the Restaurant Website

Figure 7 displays a screenshot of the App.jsx file, which is the central component responsible for organizing the structure. The key components used in the application include navigation bar (Nav), landing page (Home), menu section (Menu), restaurant information (About), contact details (Contact), operating hours (Hour), and the footer (Footer). The interactive chatbot (Chat) component is also featured, enhancing the user experience.

In addition, the website uses HashRouter from the React Router library, to manage the navigation and routing. The root path is /\*, which in this project corresponds to the Menu component. This will lead customers to routes like /home/\*, /about/\*, /contact/\* or /hour/\*.

```
import { HashRouter as Router, Route, Routes, Navigate, } from "react-router-dom";
```

Figure 8. Importing HashRouter

```

<Routes>
  <Route path="/" element={<Menu />} />
  <Route path="/home/" element={<Home />} />
  <Route path="/about/" element={<About />} />
  <Route path="/contact/" element={<Contact />} />
  <Route path="/hour/" element={<Hour />} />
  <Route path="*" element={<Navigate to="/" />} />
</Routes>

```

Figure 9. Routing Configuration

### 3.3.3 Responsive Web Design Implementation

Responsive web design is an important part of this web project because it ensures the website is optimal across multiple devices.

#### 3.3.3.1 Grid Container

Grid containers are a valuable tool in the responsive design process for this restaurant website. For customers using computers or desktop, the main menu will divide the images into 3 parts using: "grid-template-columns: 1fr 1fr 1fr;" or "grid-template-columns: repeat(3, 1fr);"

```

.main-menu {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr;
  gap: 20px;
  margin-top: 20px;
  text-align: center;
}

```

Figure 10. Grid Container Implementation

Figure 10 shows the implementation of a grid container, featuring a grid layout with three columns, adding some additional styling to enhance the user interface.

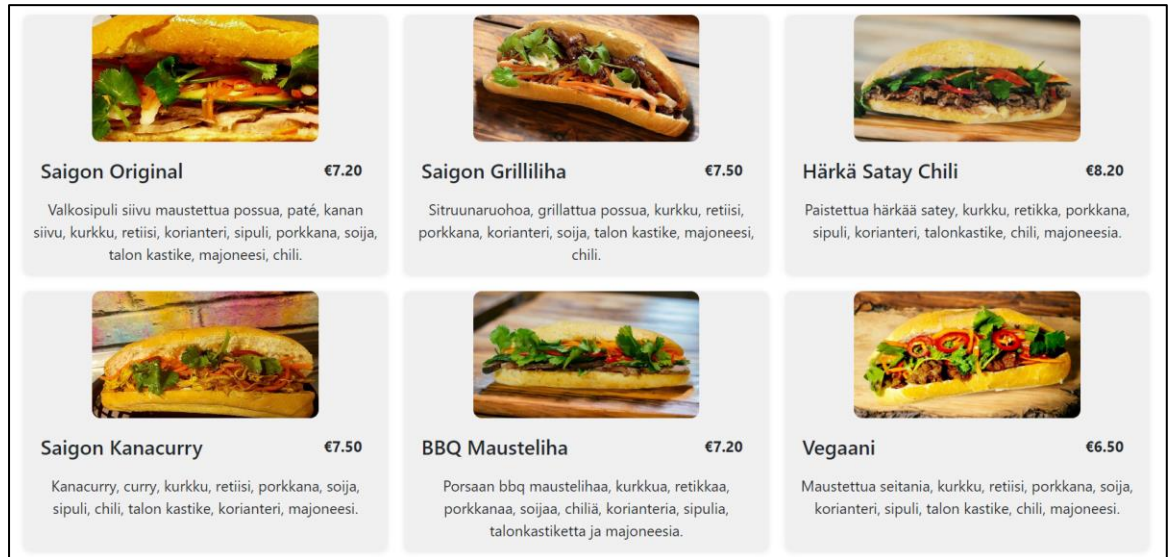


Figure 11. Grid Container Implementation Result

Figure 11 displays the actual appearance of the grid layout and some additional applied styles.

This grid container is an important component of the website design. Through the integration of media queries, the website can be designed for those customers who use smaller devices to access the website. It would be better to just divide the main menu into 2 parts.

```
@media (max-width: 768px) {
  .main-menu {
    grid-template-columns: 1fr 1fr;
    gap: 10px;
  }
}
```

Figure 12. Grid Container with Media Query

Figure 12 shows the use of grid containers for smaller devices, with all screen sizes no larger than 768px. In addition, some small adjustments were made to improve the visual appearance.

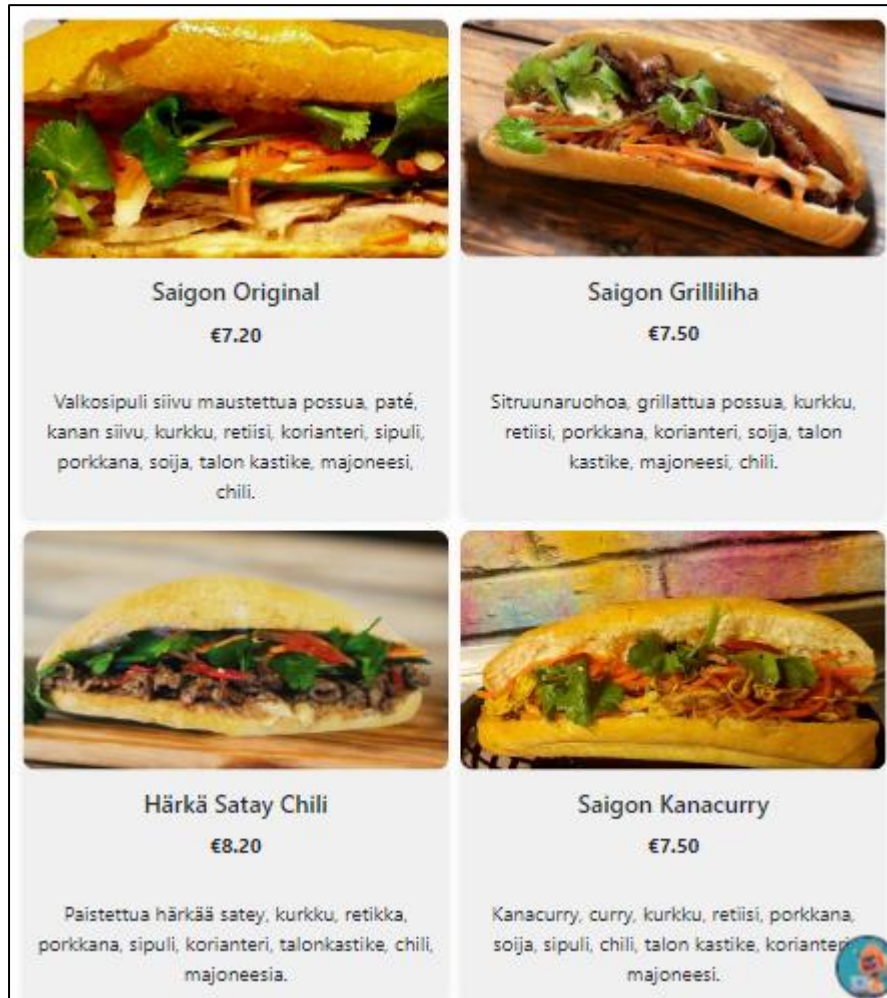


Figure 13. Actual Appearance in Small Devices

Figure 13 showcases the results of grid container combined with media query for smaller devices such as: tablets, mobile phones, etc.

### 3.3.3.2 Flexible Images

Ensuring proper image scaling is also important in responsive web design. Neglecting this may lead to some consequences, an oversized image will disrupt the layout on devices with small screens. Flexible image technique is employed to mitigate this.

```
.about-photo {  
  max-width: 100%;  
  height: auto;  
  border-radius: 10px;  
}
```

Figure 14. Responsive Image

Figure 14 displays that images on the website are designed with the attributes "max-width: 100%" and "height: auto", so that when images are scaled the aspect ratio is maintained.

This flexible image when integrated with media query can precisely adjust the size of the image on different screen sizes.

```
@media (max-width: 1324px) {  
  .about-photo {  
    width: 70%;  
  }  
}
```

Figure 15. Responsive Image 1324px

```
@media (max-width: 1024px) {  
  .about-photo {  
    width: 60%;  
  }  
}
```

Figure 16. Responsive Image 1024px

Figure 15 and Figure 16 show that for screen size not exceeding 1324px, the image width will be adjusted to 70%, and height will be adjusted accordingly to maintain the aspect ratio since it is set to auto. Similarly, when the screen size is smaller than or equal to 1024px, the image width is reduced to 60%. Breakpoints are used on the website to improve the user interface for each device, including those with dimensions less than 1024px, between 1024px and 1324px, and larger than 1324px.

### 3.3.3.3 Checking and Validation

To ensure the effectiveness of responsive web design, the site has been tested on a variety of different devices as well as using developer tools to fine-tune everything to get it right. This is also one of the most difficult and laborious stages, requiring accurate testing to make appropriate adjustments to bring the best experience to customers.

### 3.3.4 Website Internationalization

Internationalization is designing a website so that it is suitable for all users regardless of their nationality or language they speak. This is an important feature in restaurant website development because it allows the company to connect with a large number of customers.

This feature is supported by the `react-i18next` library. This can be installed by this command: `npm install react-i18next i18next.` And then, creating translation files to store the translated content. In this project, I have created 3 files `en.json`, `fi.json`, `vi.json` for English, Finnish, and Vietnamese. After that, creating and setting up `i18n.js` file to provide translations.

```
import i18n from "i18next";  
import { initReactI18next } from "react-i18next";
```

Figure 17. Importing i18n Libraries

```
import enTranslation from "./en.json";  
import fiTranslation from "./fi.json";  
import viTranslation from "./vi.json";
```

Figure 18. Importing Translation Files

```
i18n
.use(initReactI18next)
.use(initReactI18next)
.init({
  resources: {
    en: { translation: enTranslation },
    fi: { translation: fiTranslation },
    vi: { translation: viTranslation },
  },
  lng: "fi",
  fallbackLng: "fi",
  debug: true,
  interpolation: {
    escapeValue: false,
  },
});
```

Figure 19. i18n Configuration

Figure 19 shows the i18n configuration, setting up internationalization and allowing content to be displayed in English, Finnish, and Vietnamese. In this project, Finnish is the default and fallback language. This setup ensures multilingual experience for all customers.

I also created the language selector component that allows users to switch between languages. This component will include a button which helps customer to change the language of the website.



```

const LanguageSelector = () => {
  const { i18n } = useTranslation();

  const changeLanguage = (language) => {
    i18n.changeLanguage(language);
  };

  return (
    <div className="language-selector">
      <button onClick={() => changeLanguage("fi")}>FI</button>
      <button onClick={() => changeLanguage("en")}>EN</button>
      <button onClick={() => changeLanguage("vi")}>VI</button>
    </div>
  );
};

```

Figure 20. Language Selector Configuration

Figure 20 captures the configuration of the language selector which provides a button to change to Finnish (FI), English (EN) or Vietnamese (VN) when the button is clicked.

Next, I integrated i18n in all necessary components where I want the multilingual content is displayed, using “useTranslation” hook and utilizing “t” function to translate content.

```
import { useTranslation } from "react-i18next";
```

Figure 21. Importing useTranslation hook

```
const { t } = useTranslation();
```

Figure 22. Translation Hook Initialization

### 3.3.5 Implementation of Interactive Chatbot

Chatbot is an ideal tool that helps increase customer experience as well as service quality. Integrating interactive chatbot for restaurant websites is also an equally important feature. The chatbot (Chat) component is created using React and the react-simple-chatbot library. This chatbot can be installed by running the

following command in the terminal: "npm install react-simple-chatbot -save". (Bassetti, 2023)

```
import ChatBot from "react-simple-chatbot";
```

Figure 23. Importing Chatbot

In this project, I planned to just make an interactive simple chatbot. The idea is that the chatbot will be given a number of options for the customer to choose from. When the customer chooses, the chatbot will respond according to that option.

```
const steps = [  
  {  
    id: "1",  
    message: t("chat.hello"),  
    trigger: "2",  
  },  
  {  
    id: "2",  
    options: [  
      { value: 1, label: "Nice to meet you!", trigger: "3" },  
      { value: 2, label: "I want to order!", trigger: "4" },  
      { value: 3, label: "I don't know what to eat!", trigger: "5" },  
    ],  
  },  
  {  
    id: "3",  
    message: "Nice to meet you too :)",  
    trigger: "2",  
  },  
  {  
    id: "4",  
    message: "Sure! You can go to Order in the navigation bar, then choose Wolt or Foodora to order!",  
    trigger: "2",  
  },  
  {  
    id: "5",  
    message: "I will recommend you to try Saigon Grilled Meat, which is the best seller of our store!",  
    trigger: "2",  
  },  
];
```

Figure 24. Interactive Chatbot Options Configuration

Figure 24 shows the options configuration for chatbot. I set up the options for the chatbot. When a user chooses any option, the chatbot will rely on the labels to trigger responses for that option.

```

<ChatBot
  steps={steps}
  botAvatar={img}
  headerTitle="Saigon Sandwich Bakery"
  hideSubmitButton="true"
  placeholder=""
></ChatBot>

```

Figure 25. Chatbot Integration Configuration

Figure 25 shows the configuration of chatbot for the website which defines the chatbot's conversation, appearance as well as the user interface option. In the above snippet, I changed the avatar for the chatbot and changed the header title to Saigon Sandwich Bakery. The submit button is hidden because in the current version, this chatbot mainly lets customers choose options and respond.

Not only that, the react-simple-chatbot library also supports changing the main theme, font and color for the chatbot on the website.

```

const theme = {
  background: "#f5f8fb",
  fontFamily: "Poppins, sans-serif",
  headerBgColor: "#ffc27d",
  headerFontColor: "#000",
  headerFontSize: "15px",
  botBubbleColor: "#ffc27d",
  botFontColor: "#000",
  userBubbleColor: "#ffd27d",
  userFontColor: "#020",
};

```

Figure 26. Chatbot Interface Styling

Figure 26 shows the chatbot styling configuration which enhances the chatbot's visual appeal and aligns with the website's design, promoting a consistent and professional interface.

”

### 3.4 Unit testing

Unit testing is an important part of website development. It assists developers in detecting mistakes early and promptly fixing them before deployment. One of the user-friendly and widely-used JavaScript Testing Frameworks is Jest. It can be installed by running the following command: `npm install --save-dev jest` (Jest, 2023.). In addition, I also installed the testing library using command `npm install -save-dev @testing-library/react`.

Next, creating a test file to test the component. In here, I created a file named `App.test.js` to test the `App` component.

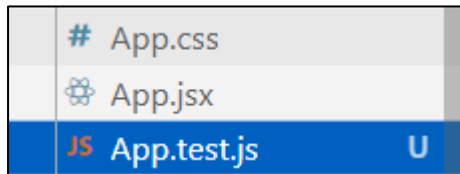


Figure 27. Test File for App Component

After that, I updated “scripts” section in `package.json`, configuring the test command to use Jest, now it should look like below:

```
"scripts": {  
  "dev": "vite --force",  
  "build": "vite build",  
  "lint": "eslint . --ext js,jsx --report-unused-disable-directives --max-warnings 0",  
  "preview": "vite preview",  
  "test": "jest"  
}
```

Figure 28. Configuring Test Command

Finally, we can start writing test cases to test our component's content. Here I wrote a simple test case to check if the App component can be rendered without errors.

```
src > JS App.test.js > ...
 1  import { render } from "@testing-library/react";
 2  import App from "./App";
 3
 4  //test 1
 5  test("App rendering", () => {
 6    |   render(<App />);
 7    | });
```

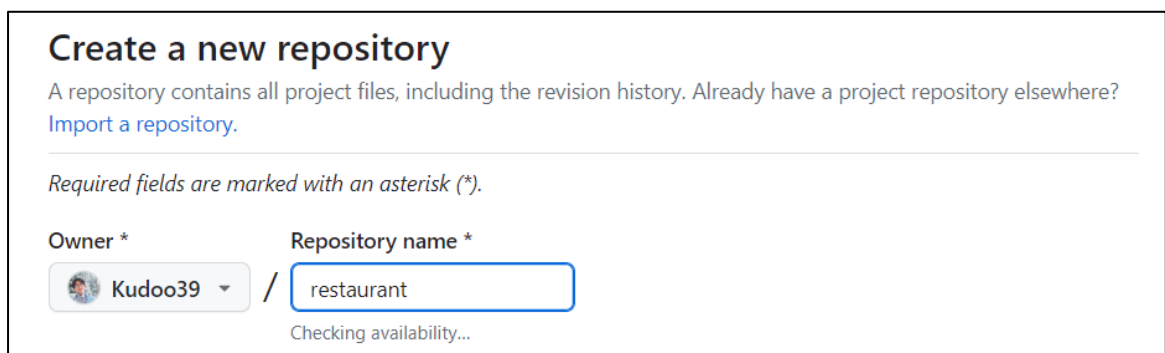
Figure 29. Testing App Component Rendering

### 3.5 Uploading Code to GitHub and Deployment

Once the project is completed, it will be uploaded to GitHub for storage. In this section, we will walk through the step-by-step process of uploading the project code to the GitHub repository.

#### 3.5.1 Uploading Code to GitHub

First, create a GitHub repository to archive the website project.




**Create a new repository**

A repository contains all project files, including the revision history. Already have a project repository elsewhere?  
[Import a repository.](#)

---

*Required fields are marked with an asterisk (\*).*

Owner \*      Repository name \*

 Kudoo39 /

Checking availability...

Figure 30. Creating New Repository

Give a name to that repository and then Create New. After that, use Git commands to stage and commit changes.

```

• PS C:\Users\npdkh\Desktop\restaurant\restaurant-app> git add .
• PS C:\Users\npdkh\Desktop\restaurant\restaurant-app> git commit -m "upload code to GitHub"
On branch main
Your branch is up to date with 'origin/main'.

```

Figure 31. Committing Changes

Then, add the GitHub repository just created earlier as a remote using the command:

```
git remote add origin <repository-url>
```

<repository-url> is the actual GitHub repository's URL.

Finally, push the local project to GitHub repository using:

```
git push -u origin main
```

```

• PS C:\Users\npdkh\Desktop\restaurant\restaurant-app> git push -u origin main
Enumerating objects: 790, done.
Counting objects: 100% (790/790), done.
Delta compression using up to 8 threads
Compressing objects: 100% (351/351), done.
Writing objects: 100% (790/790), 12.20 MiB | 1.33 MiB/s, done.
Total 790 (delta 476), reused 731 (delta 432), pack-reused 0
remote: Resolving deltas: 100% (476/476), done.
To https://github.com/Kudoo39/restaurant
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.

```

Figure 32. Pushing the Code

The screenshot shows the GitHub interface for a repository named 'restaurant' by user 'Kudoo39'. The repository is private and has 1 branch (main) and 0 tags. The commit history shows a recent commit 'Kudoo39 upload code to GitHub' from 15 minutes ago with 99 commits. The file list includes 'public', 'src', '.eslintrc.cjs', '.gitignore', 'README.md', 'index.html', 'netlify.toml', 'package-lock.json', 'package.json', and 'vite.config.js', all with their respective commit times.

Figure 33. Successfully Pushing Project to GitHub

Figure 33 shows the project has been successfully uploaded to the GitHub repository, all files and folders of the project can be seen in GitHub. And by pushing the project to GitHub, developers can collaborate to develop into larger projects in the future.

### 3.5.2 Deployment with Netlify

In this section, this will present how to deploy a website to the public. There are various hosting platforms available such as Heroku, Netlify, GitHub Pages, Vercel, etc. Each has its own advantages and disadvantages. I will deploy this restaurant website to Netlify.

First, create a Netlify account, a GitHub account can be used to log in to Netlify. To deploy the project in Netlify, click on Add new site, then click on Import an existing project.

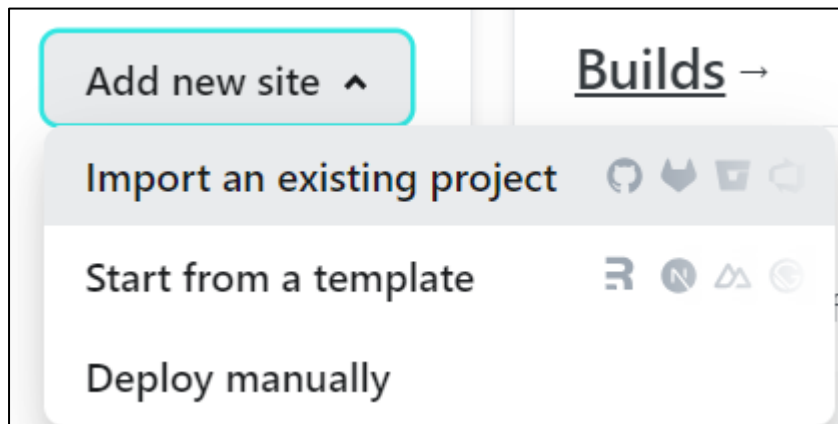


Figure 34. Deploying New Project

After that click on Deploy from GitHub, this allows us to connect Netlify to GitHub repositories. Then we can choose the restaurant website which was pushed to GitHub recently to deploy.

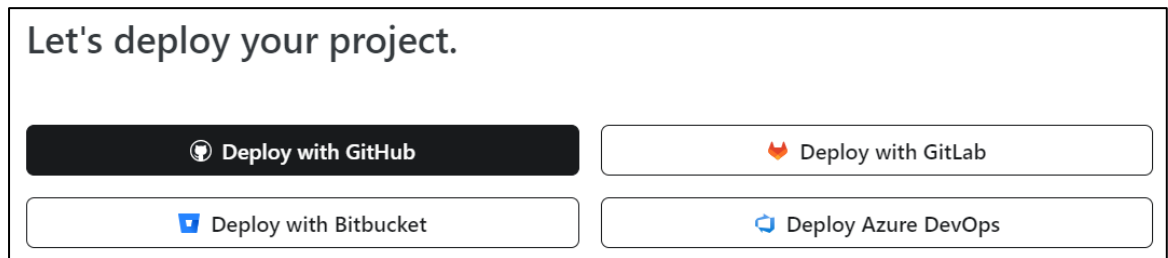


Figure 35. Deploying with GitHub

Setting the branch to deploy to `main`, for build command, we set `npm run build`. Publish directory will be `dist`.

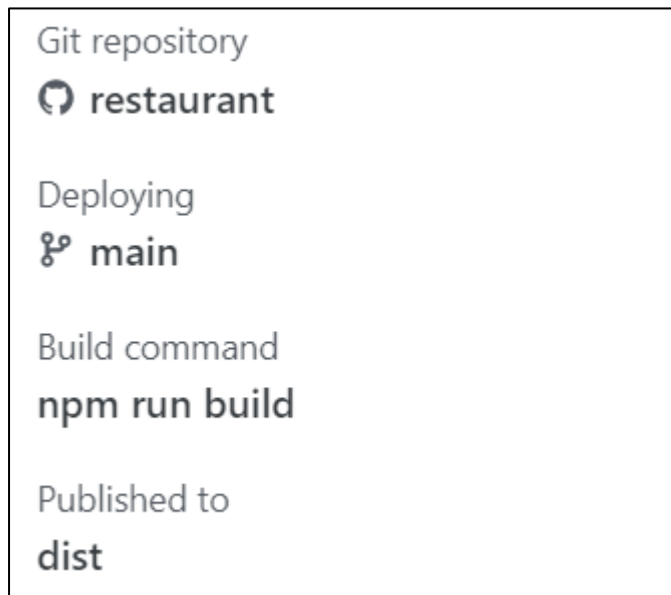


Figure 36. Setting Build

After configuring build settings, Netlify will start to build and deploy the website whenever we push changes to the GitHub repository.



## 4 RESULT

### 4.1 Website Result

The Saigon Sandwich Bakery website was successfully developed and deployed on Netlify. This is an online presence that enhances customer experience. The website allows users to explore the store's menu, learn more necessary information and interact with an interactive chatbot.

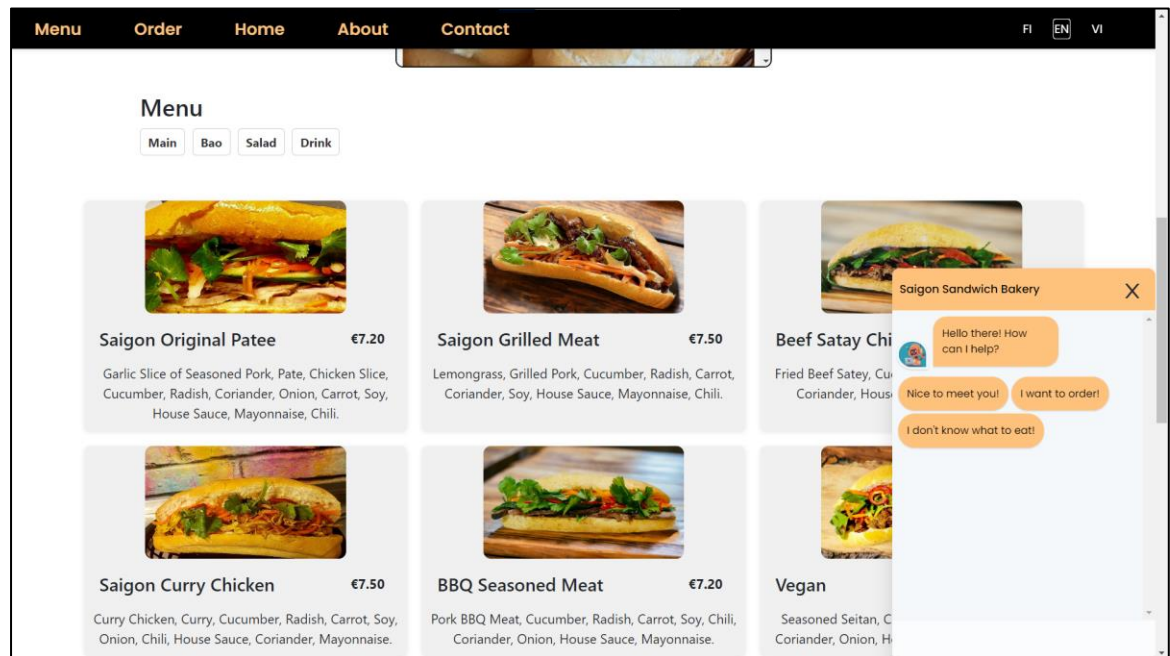


Figure 37. Saigon Sandwich Bakery Website

### 4.2 Challenges and Difficulties

During the development process for the Saigon Sandwich Bakery website, one of the outstanding challenges I encountered was achieving a responsive web design. This is an important and essential feature of the website that helps the website adapt to many different screen sizes, from computer screens to mobile devices.

To solve this challenge, I used developer tools provided by Google Chrome web browser which is Chrome DevTools. This Chrome developer tool allows me to inspect, and manipulate the web page, I used it to adjust the screen size and simulate various devices, as well as evaluate the website's responsiveness. In

addition, it is necessary to use many different types of devices to carefully test the website again, making sure that the website is compatible on all devices. As a result of these efforts, the website now performs excellently, delivering an optimized user experience regardless of the device used.

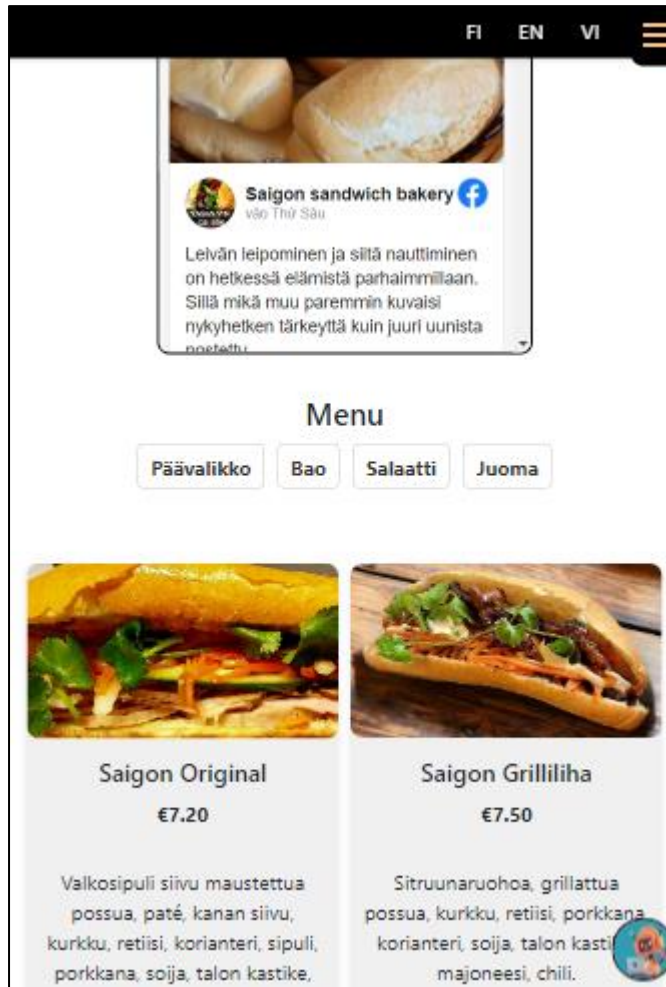


Figure 38. Saigon Sandwich Bakery on Small Devices

### 4.3 Future Improvements

The website of Saigon Sandwich Bakery can be improved in the future. An improved user review system could be a valuable addition to the website. Receiving these reviews are very helpful for future website development. Furthermore, chatbots' capabilities can be enhanced, allowing them to engage in more dynamic and interactive conversations with customers. The main concept is to have an automated support "person" who does not request payment or complain about working hours.

## 5 CONCLUSION

In conclusion, the Saigon Sandwich Bakery website has admirably achieved its set goals. The primary objective was to effectively convey the essence of the Saigon Sandwich Bakery brand to customers, which has been accomplished. This project also aligns seamlessly with the company's aspirations to establish a robust online presence accessible to customers anytime and anywhere, fostering meaningful connections between the company and its customers.

The website not only creates the company's digital presence but also contributes to increased customer engagement and accessibility. Some customers are curious about the dishes on the website, causing them to try them at the restaurant, contributing to increased revenue for the restaurant. Furthermore, in an era of digital evolution, the website extends the company's reach to a broader audience, bolstering its reputation and reinforcing its place in the market.

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