Development of Online Tailor Platform (Tailor Mama)

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the **Degree of Bachelor of Science in Computer Science and Engineering**

Supervised by

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APPROVAL

This Project titled **"Development of Online Tailor Platform (Tailor Mama)"**, submitted by **Rokibul Hasan**, ID No: **191-15-2439** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 12 January, 2025.

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We hereby declare that this project has been done by us under the supervision of **Amatul Bushra Akhi, Assistant Professor**, Department of Computer Science and Engineering, Daffodil International University. We also declare that neither this projectnor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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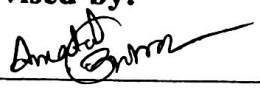

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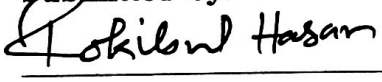

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ABSTRACT

"Tailor Mama" remains a fully digitalized version of the traditional tailoring business and services that creates a convenient digital environment for custom made clothing. This project occupies a meaningful niche in the Bangladesh battery-operated tailoring market that for the most part remains offline and ineffective. Customers can search for fabrics, input their body measurements, and order ready-to-wear garments that will fit them perfectly; while at the same time, tailors can easily track their orders and interact with customers through a simple to use back end interface.

The system is made up of front end design for view and interaction plus a back end internal database for efficient handling of data. They are user registration, product and measurement input forms and catalogs as well as order tracking and payment systems. The platform focuses on UX design, which means, customers and tailors will be able to easily find and interact with the app.

Unit and integration tests, as well as user acceptance tests made the comprehensible result for the effectiveness and stability of the platform. Performance test evidenced high robustness, flexibility and user satisfaction. The study also reviewed several online tailoring solutions already in existence in Bangladesh and realized that these had very major shortcomings in terms of functionality and convenience which "Tailor Mama" eliminated.

The following report describes the accomplished phases of the system development including the requirement analysis, conceptualization, realization, and testing phases. The technical project itself eloquently showcases how advanced technology can open up a number of opportunities to integrate with traditional tailoring processes in order to improve accessibility, satisfaction and the reach out in the markets

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CHAPTER 1
INTRODUCTION

1.1 Introduction

Recently, the market of internet shop and companies providing made-to-measure clothing became a popular industry because of the availability of the services. Conventional strategies of garment manufacturing entail several trips to different outlets for measurements, fitting, and alteration services that can be cumbersome to the customers. Furthermore, readymade garments are not suitable to the shape and size of the body, they usually have a flawed fit. Understanding these adversities, the Tailor Mama project is designed to be an efficient solution, based on the model of an online store with references to bespoke services. Tailor Mama is an online store to provide users with the convenient way of shopping and ordering customized clothing. The features under the project enable customers to walk through a gallery of clothing items, order for them and even submit their measurements to fit the clothes appropriately. Customers can either select off the shelf clothing items or order customized clothes by feeding the tailor personal measurements through a simple web form. implementing the new web technologies and tools include Node.js for development backend, MongoDB for management of the database as well as the HTML/CSS/JavaScript for development of frontend, Tailor Mama has a vision to create a great solution satisfying both the normal shopping client and the one who is looking for tailoring services. The system is designed with a dual-interface approach: a customer-facing frontend that provides an environment for buyers and submission of measurements and a second, an internal management-facing backend for the creation of products for sale, order fulfillment, and customer data handling. Therefore, the ultimate aim in using Tailor Mama is to improve user experience when purchasing clothes, as well as when getting custom-made outfits commissioned.

1.2 Motivation

The reason for the establishment of Tailor Mama is to eradicate difficulties felt by consumers throughout the course of clothing and tailoring services. The application is to be valuable for people to make shopping for clothes as well as ordering unique-made items more efficient based on the possibilities of digital technologies. Key motivations include:

- **Enhancing Customer Convenience:** Scrapping the need for customers to spend time and effort visiting these stores, Tailor Mama has made the services available online.
- **Promoting Personalized Clothing:** Due to this the project seeks to incorporate the area of customization through which customers will get exactly what they want and hence customize their experiences.
- **Supporting Local Tailors:** One of the areas Tailor Mama covers is that it connects local tailors to customers to increase their client base and expand the

business.

- **Utilizing Modern Web Technologies: The** project is a good chance to introduce the best tools of the modern Web development processes, including Node.js, MongoDB, and Responsive Web Design.

1.3 Objectives

The primary objectives of Tailor Mama are as follows:

- **To Develop a User-Friendly Online Platform:** Create a responsive website where customers can easily browse, purchase, and order custom-tailored clothing items.
- **To Provide Accurate Measurement Submission:** Enable users to submit their body measurements through an intuitive online form, ensuring precise tailoring.
- **To Facilitate Efficient Order Management:** Develop a backend system for processing orders, managing products, and handling user data securely.
- **To Ensure Data Security and Privacy:** Implement robust security measures to protect user information, including sensitive data like measurements and payment details.
- **To Enhance the User Experience:** Design the platform with a focus on usability, accessibility, and responsive design, ensuring a seamless shopping experience across.

1.4 Methodology

The establishment of the "Tailor Mama" site was done systematically to capture a systematic growth and organization. The development process used in the project was Agile because it breaks development cycles into iterations.

Requirement Analysis: The needs of key stakeholders were gathered with the help of questionnaires and research. The major functions such as fabric browsing, measurement input, and order tracking, were determined.
System Design: The modularity concept was considered while design the architecture. There were database schemas for any data storage and to make the interface more user friendly there were wireframes.

Implementation:

- **Front-end Development:** It has been created with HTML, CSS and JavaScript for better-looking, efficient and ease-using format.
- **Back-end Development:** Developed using Python and Django to support handling of real-time server and database operations.
- **Payment Gateway Integration:** Modes of payment such as online and cash and cash on delivery.

Testing: Underwent unit, integration and system testing to fix some bugs found in the automated software. User acceptance testing was conducted in other to ensure its

usability and how functional it was.

Deployment: It was secured on a server, and could therefore be accessed across various devices.

Evaluation and Feedback: Data was also gathered from users to know on what needs to be improved and most importantly how to expand.

This approach guaranteed the platform success in maximizing the needs of the users and providing a stable solution on a large scale.

1.5 Project Outcome

Finally, the implementation of the Tailor Mama project enables the creation of an operational e-commerce store that sells clothes while also offering individual sewing services. The platform allows users to:

- Register and log in securely.
- Select a matching set of clothes from among ready-made products.
- For fitted clothes, send body statistics.
- Orders can be placed and safe payment can be made.
- Monitor their orders and get notifications.

The paper forms an efficient business framework as the administrative backend is involving in the products, users, and orders. Tailor Mama provides what the clients want: tailors who want to increase their services online and the customers who do not have enough time to search for clothes.

1.6 Organization of the Report

The project report is structured as follows:

- **Chapter 2:** Literature Review An overview of current online offerings for tailoring and clothing retail and the need the Tailor Mama addresses.
- **Chapter 3:** Methodology – The detailed description of the development methodology such as system design and the architectural.
- **Chapter 4:** Requirement Analysis and Design Specification — A detailed analysis of specification in the frontend and backend of a system.
- **Chapter 5:** Implementation and Testing — A detailed report on how implementation process was conducted, testing techniques used and the outcome as well.
- **Chapter 6:** Societal, Environmental & Sustainability factor analysis — A study on the extent to which the project has an impact of society and consideration given to environment and sustainability.
- **Chapter 7:** Conclusion and Future Work — Briefing of the Project Contributions and Directions for Improvement.

CHAPTER 2
BACKGROUND

2.1 Introduction

Given the emerging use of electronic commerce in the society and the provision of virtual services, the clothing and tailoring line has been transformed across the globe including Bangladesh. Online tailoring platforms are appearing as more and more customers prefer comfortable and unique services with personalizing the products for their needs. Earlier, for measuring, fitting, and collecting dresses people had to visit traditional tailor shops which is not a good experience. As more and more people turn to online services, the customers no longer have to go through all the trouble of having their clothes made to order over the Internet. Some of the popular online tailor shops work as an online store and also provide a service of custom-made clothes. These platforms intend to become the meeting point of the customers who want perfectly fitting clothes off the retail racks, and the tailors who want to market their services online. The ease of home delivery, custom measurement products, and simple tracking of the orders have become very relevant differentiators in the online tailoring business. However, the current existing solutions are still offering several constraints such as, measurement data submission is a complicated process, the services are rarely available for mass audience, mostly targeting menswear, and is not available in widespread geographic coverage. Further, only a handful of platforms provide a seamless solution of retail-readymade options integrated with complete custom solutions. To overcome these challenges, the Tailor Mama project was designed as an online platform that deals with both at a ready-to-wear and made-to-measure segment. Some of the benefits which users would derive from this device include; ease in the measurement submission process as well as flexibility that has been incorporated in order to make users' experience more enjoyable, and the guarantee that their data is safe. Where competitors merely provide a service, Tailor Mama presents itself as a one-stop solution for a new audience of users in the expanding e-tailing market.

2.2 Literature Review

In the context of the "Tailor Mama" project, the literature review explicitly concerns the assessment of currently existing online tailored services and e-commerce platforms, as well as the strategies of UX design. It points out current market needs especially in the Bangladesh market where tailoring service providers are mainly offline and where consumers do not have access to customer-focused digital services. Areas of concern consist of appropriate implements for different devices, safe system for payments, good organization of orders, and incorporation of customization parameters such as body measurements. It serves as basis for the creation form a unique, customer and tailor-oriented solution which will encounter the problems described in earlier publications.

Table 2.2: Summary of Literature Reviewed.

Author(s)	Year	Title	Methodology	Key Findings
Chaffey & Ellis-Chadwick	2019	Digital Marketing and E-commerce	Literature review and case study analysis	Emphasized the importance of user engagement, digital marketing, and customer retention strategies.
Nielsen & Norman	2013	User Experience Design	Qualitative analysis of UX/UI trends	Highlighted usability, accessibility, and intuitive navigation as key factors for digital platform success.
Kumar & Sharma	2020	Trends in Payment Systems	Data analysis of e-commerce payment trends	Found that secure and diverse payment options are critical for user trust and platform adoption.
Ehsan et al.	2021	Online Tailoring in South Asia	Survey and comparative analysis	Identified gaps in user satisfaction and platform functionality, particularly in developing regions.
W3Schools (n.d.)	N/A	Responsive Web Design	Practical tutorials and guidelines	Provided best practices for creating mobile-friendly and responsive websites.
Islam & Rahman	2021	Challenges for Online Tailoring in Bangladesh	Case study and interviews	Highlighted local challenges such as limited internet access and lack of digital tailoring platforms.
Stack Overflow (n.d.)	N/A	Secure Payment Integration	Community-driven technical solutions	Offered technical guidance on implementing secure payment systems efficiently.
Behance (n.d.)	N/A	UX/UI Design Trends	Portfolio and trend analysis	Showcased modern design patterns and user-centric aesthetics for e-commerce platforms.
Wirtz & Zeithaml	2018	Service Marketing Strategies	Literature review	Focused on personalized services and loyalty-building strategies for service-oriented businesses.
Statista	2023	Ecommerce Growth in Bangladesh	Statistical data analysis	Reported the rising adoption of digital platforms and growing e-commerce market in Bangladesh.

2.2.1 Similar Applications

2.2.1.1 iTailor: iTailor Bangladesh is one of the most used applications to get tailored shirts and suits in which users place order through giving measurement details. It has a detailed measuring guide for customers which allow them to plug in their body measurements for clothing. However, one of the difficulties in using this tool arises from the fact that the measurements needed to generate an accurate fit are often difficult to obtain by novices in the art of fitting of clothing. Furthermore, it is largely concentrating on men tuxedos and suits that might not be appealing to a large market segment. Online retailer of Abstract custom-made men's wear, specifically formal wear, body measurement guide (iTailor, n.d.).

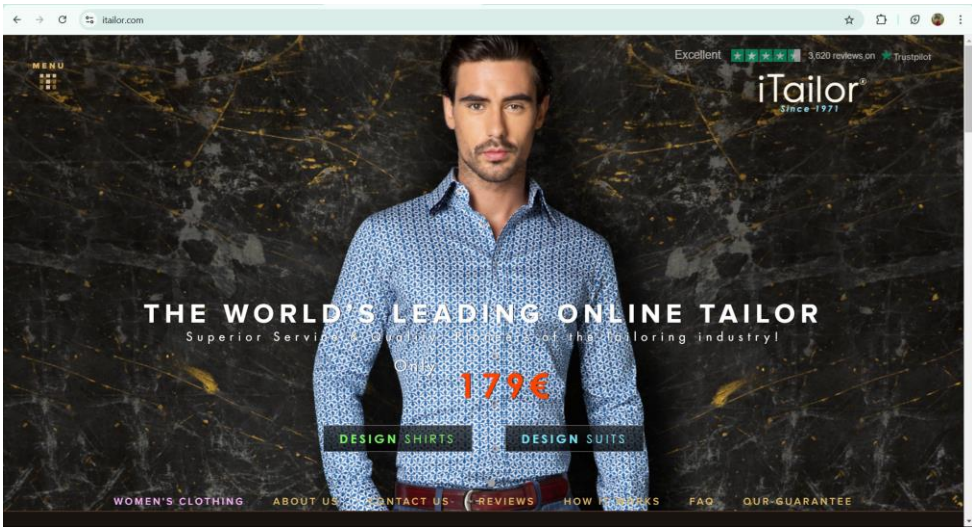

Figure 2.2.1.1: Front page of iTailor

2.2.1.2 Dorji Bari: Dorji Bari has a right section for clothes making that has an online portal where users can input their measurements to receive personalized clothes. There are also choices concerning changes of garments that are already made since the platform caters for those who might need minor adjustments. While Dorji Bari offer online order for custom made clothing they major in customers within their country and they have few methods of payments compared to what customers in developed countries would consider standard. Picking and choosing, alterations, restricted payments options (Dorjibari, n.d.).

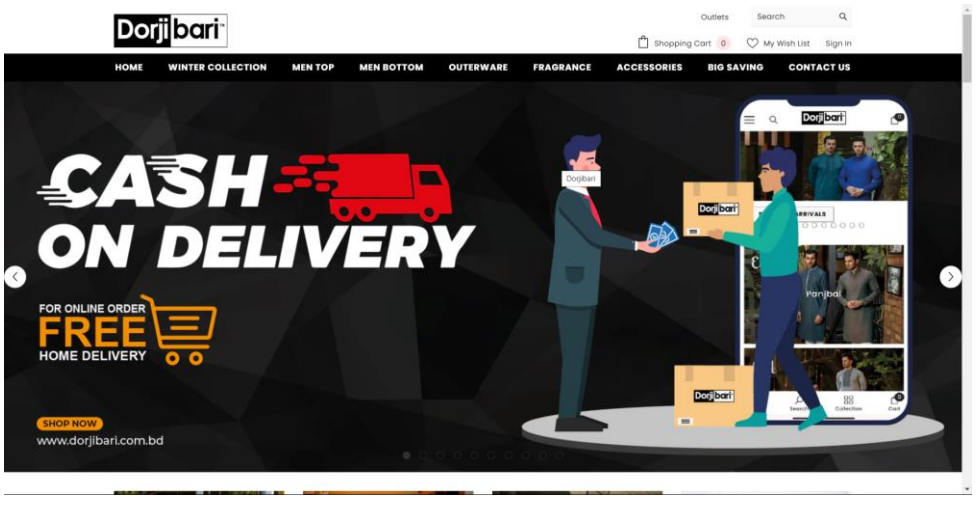

Figure 2.2.1.2: Front page of Dorji Bari

2.2.1.3 Kay Kraft: Still, establishing an online selling platform is critical; one prime example of a Bangladeshi fashion brand dealing with online tailoring service is Kay Kraft. The body allows customers to buy clothes that are pre-made and also allows them to alter the clothes by choosing basic customization like resizing, or getting the length of the clothes changed through the website. The offering of the apparel tailoring is aligned with the actual clothing line but as for the customization services provided, the company does not offer completely unique bespoke garments but minor alterations only. This prevents the customer from achieving a complete tailored fit of the solution to them. Standardize the professions with the new fashion garments, simple stitching works, restricted designing freedom (Kay Kraft, n.d.).

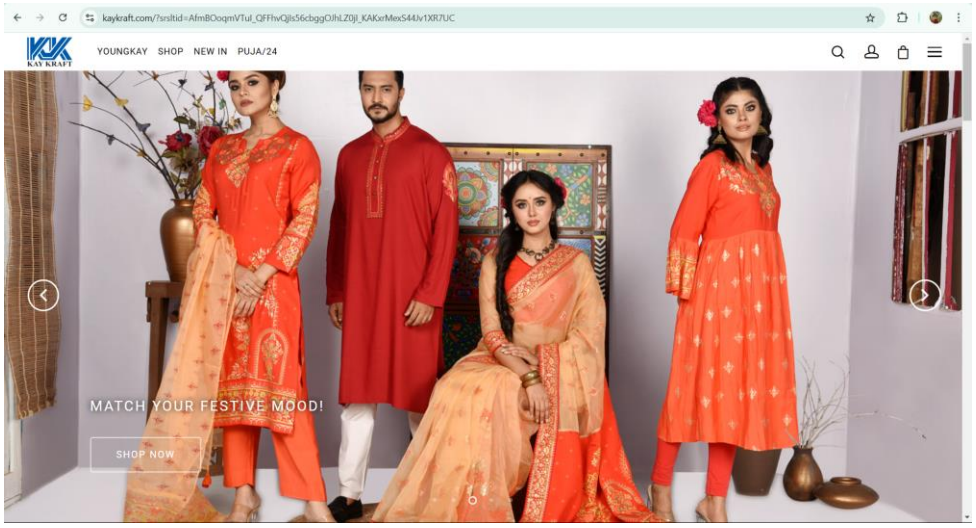

Figure 2.2.1.3: Front page of KeyKraft

2.2.1.4 Othoba: A demand site that has a large section of e-commerce in Bangladesh is Othoba.com and it has a special offer for tailoring services. Customers can view options of different clothing materials and order clothing made to individual's measurements through the Internet. Hence while Othoba.com avails many fabric types and basic alterations the site seems to be more of a fabric selling site rather than a site for bespoke clothing and therefore can. Choice of materials, individual approach, the shift in a focus from material supply to shrinking tailoring services (Othoba, n.d.).

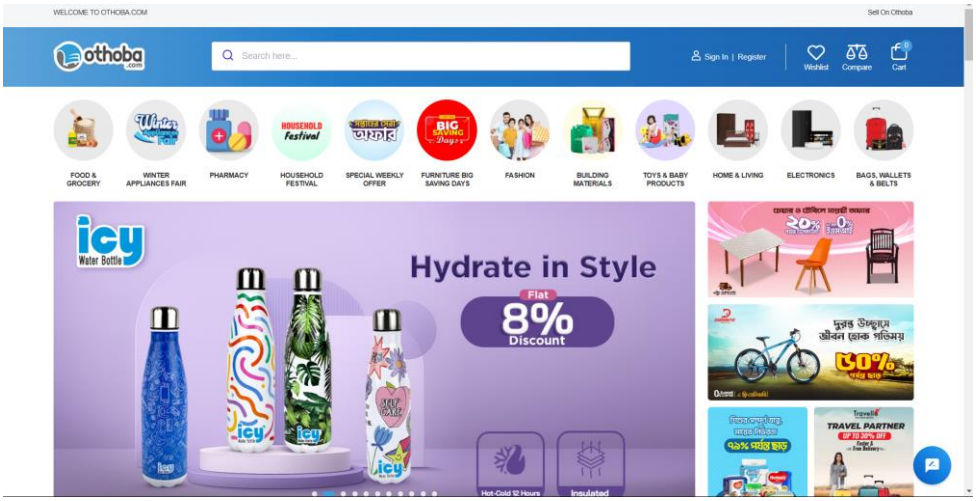

Figure 2.2.1.4: Front page of Othoba

2.2.1.5 Dressup Tailors: Dressup Tailors is an online tailoring shop based in Dhaka that deals with new dresses for male and female. Regarding this, the platform enables users to upload their measurements through the internet and delivers at the doorstep of the users all over Dhaka. The major drawback which can be seen for Dressup Tailors is its limited delivery area, which hinders them to provide services to the customers outside the Dhaka city. Also, submitting the measurement can be complicated for those who are not familiar with concept-tailoring. Bespoke tailoring for the male and female uniform and special occasion wear, home delivery, limited territorial reach (Dressup, n.d.).

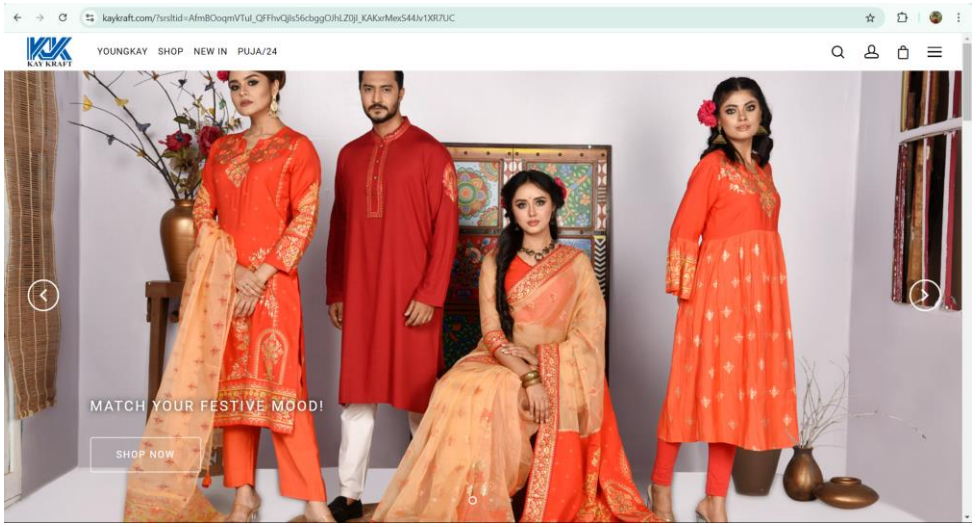

Figure 2.2.1.5: Front page of iTailor

2.2.2 Related Research

The investigation into existing research literature provides a comprehensive understanding of the current landscape and challenges associated with online tailoring platforms, e-commerce systems, and user experience (UX) designs. Key insights reveal that while e-commerce is gaining significant traction globally and in Bangladesh, there are notable gaps in the online tailoring industry, particularly in terms of usability, customization, and localized services.

Studies like those by Ehsan et al. (2021) and Islam & Rahman (2021) highlight the limited digitalization of tailoring services in South Asia and Bangladesh. These challenges include the absence of user-friendly platforms, poor integration of body measurement tools, and lack of secure payment systems. Additionally, research on UX design emphasizes the importance of intuitive navigation and responsive web design to ensure accessibility across all devices, which is critical for customer satisfaction and retention. Furthermore, the literature underscores the necessity of incorporating diverse and secure payment methods to enhance trust and usability, as detailed in works by Kumar & Sharma (2020) and Stack Overflow resources. Marketing studies emphasize the importance of customer engagement and personalized services as vital strategies for platform success (RAPID, 2021).

By synthesizing these findings, the literature review identifies clear gaps that "Tailor Mama" aims to address. The platform leverages insights from existing research to offer a user-centric, secure, and localized online tailoring solution. This investigation lays a strong foundation for the design, development, and implementation of a robust platform tailored to the needs of Bangladeshi consumers and tailors.

2.3 Gap Analysis

As the demand for online tailoring services in Bangladesh is enormous, the current platforms have shortcomings that fought exhaustive user experience. The following breakdown also outlines the main issues that are unmet in the current solutions available in the market and how Tailor Mama responds to those issues.

2.3.1 Measurement Complexity and User Experience: Same as other many Bangladeshi platforms like iTailor Bangladesh and Dorji Bari, customers are expected to measure themselves correctly by following the instructions provided. This may become very tiresome for the users particularly so those that have not dealt with customizing terms or tools. The absence of a step by step or guided process of how to submit measurements results into the system creates poor garment fit and errors. In this regard, Tailor Mama helps to overcome this problem since it also provides users with a measurement submission form that is quite easy to fill in with clear illustrations and directions.

2.3.2 Geographic Limitations: From where most of the users may not have access to such services since Dressup Tailors and Dorji Bari only operates in areas such as Dhaka. This limited coverage does not suffice the rising demand for online tailoring services all over the country. Conversely, Tailor Mama is expected to operate was coverage

throughout the country as the platform utilizes a strong delivery system through which its customers from all corners of Bangladesh can use its custom tailoring services.

2.3.3 Lack of Integrated Retail and Custom Tailoring: There are some web-based stores like Kay Kraft Tailoring and Othoba.com or other stores which provide ready apparel or simple stitching and embroidery services however they are not able to integrate these with elaborate customized web-based apparel solutions. What is more, this approach assumes that customers need to shop for the ready garments separately for each part of their body and then turn for alterations implying the fragmentation of the user experience. Tailor Mama offers an ala carte where the user only orders clothe and chooses from pre-made clothes, and bespoke where the user gets unique clothes from scratch, among ordering clothes from different brands. This integration is beneficial as it makes shopping easier for the user while at the same making it more flexible.

2.3.4 Niche Market Focus: Some local players as iTailor Bangladesh targeting men's formal wear and Samsuri targeting women formal and ethnic wears segments. This channel restricts the number of styles available meaning some detail customers who want to buy different clothes such as casual wear, traditional wear, and children wear will be turned off. Tailor Mama was set up with this gap in mind and to provide customers with a number of services with a variety of products ranging from casual wear, business wear, ethnic wear and kids wear. Such a wide selection is beneficial because is enables the platform to meet the preferences of Bangladeshi customers.

2.3.6 Security and Payment Concerns: Several important issues important to Bangladeshi users are privacy of data shared online and secure online payments. Social Stores such as Dorji Bari and Dressup Tailors may have a small number of payment method facilities available since most online payment services present security issues in Bhutan. These issues are tackled by Tailor Mama by adopting different secure encryption measures, accepted method of payment which include mobile payments, credit and debit cards as well as cash on delivery and adopting policies that standardize data privacy to ensure that customers have confidence in the application.

2.3.7 Digital Capitalism: Almost all the current online fashion platforms in Bangladesh have not incorporated new features such as try-on using augmented reality (AR) or using artificial intelligence (AI) for recommendation systems. This is somehow leads to disadvantages that are; Unlike traditional supermarkets and retail stores, the customer is offered a less engaging and personalized shopping environment. This is an area that Tailor Mama will seek to fill when it makes further updates by providing augmented reality for fittings, and with assistance of artificial neural networks to recommend products depending on the measurements of the customer and their preferences.

Table 2.3: Gap Analysis

Features	**iTailor**	**Dorji Bari**	**Kay Kraft**	**Othoba**	**Dressup**	**Tailor Mama**
Custom Tailoring	Yes	Yes	Limited	Yes	Yes	Yes
Ready-Made	No	No	Yes	Yes	No	Yes

Clothing						
Measurement Submission	Yes	Yes	Yes	Yes	Yes	Yes
Alteration Services	No	Yes	Yes	No	Yes	Yes
Geographic Reach	Yes	Yes	Yes	Yes	Yes	Yes
Payment Options	Yes	Yes	Yes	Yes	Yes	Yes
Target Audience	Yes	Yes	Yes	Yes	Yes	Yes

2.4 Summary

Literature review chapter presents the synthesis of the prior researches regarding online tailoring platforms, e-commerce systems and user experience design specially tailored for Bangladeshi context. They pinpoint emerging issues within the market such as a lack of proper professional digital tailoring platforms that can be tailored to the local market, the incorporation of the body measurement tools as well as lack of focus on the customer needs satisfaction while picking a tailoring service. The analyzed sources show that today the main focus is placed on responsive Web design, secure payment systems, and site usability, which is supported by the findings of Chaffey & Ellis-Chadwick (2019) and Nielsen & Norman (2013). These results underscore the importance of interface continuity for online communities to succeed. Furthermore, studies at the regional level have found certain issues such as limited digital take-up in Bangladeshi customers and a dearth of solutions in the formulation about both the customers and the tailors. The chapter also focuses on the trends additional in 'e-commerce and digital payment systems that can offer important insight into the design of an efficient an safe payment mechanism for 'Tailor Mama' company. In addition, it provides a study of customer- centric business and marketing approaches to brand and customer loyalty and trust formation, according to Wirtz & Zeithaml (2018). In conclusion, the literature review shows the gap in the current literature by identifying the importance of an innovative user focused localized online tailoring solution. These realizations form the basis to design "Tailor Mama" to fill the gaps and maximize the efficiency of an ideal solution as perceived by Bangladeshi users.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Methodology/Requirement Analysis & Design Specification

The process of progressing towards the final "Tailor Mama" platform is based on a refined framework that can effectively foster a strong and highly functional and efficient platform. The methodology combined requirement analysis and design specification to satisfy both the technical and the user requirements.

Requirement Analysis: In the requirement analysis phase, it was a must to determine the needs of the customers and the tailor. There were main capabilities identified: ability to browse cloth online, body measurement input capability and order status tracking. Extra features included a payment gateway, integration and a website that could be accessed on all devices. The information was collected by means of market research, surveys and analysis of the competitors' activity.

Design Specification: The aim of the design specification is to achieve a positive user experience. The platform employs:

- **Database Design:** An efficient relational database was designed for the purpose of storing user profiles, orders and other essential payment information safely.
- **Front-End Design:** Designed to have an interactive user interface using the responsive frameworks.
- **Back-End Design:** Integrated with sound APIs for users, measurements data processing and order management provisions effectively.
- **Payment Integration:** To ensure secure payment options consumers, multiple card and mobile wallets options were included.
- **Testing**: Recursive testing was employed to check for functionality, security and usability.

Methodology

The chosen project was designed using the Agile Development Model that enabled the provision of design, development, and testing in cycles. Further, feedback loops had enhanced efficiency with reference to stakeholder needs by ensuring the platform was effective. For the purpose of implementation, back-end implementing language Python, and modern front-end developing libraries including React.js were employed.

3.1.1Overview

The approach for Tailor Mama project was deliberately planned to maintain great order yet significant liberty for the growth of a fully integrated online tailoring service. The goal was to design one system that blends off the counter apparels with made to order clothing with an app user experience. To this end we used a development model that incorporates aspects of both Agile and Waterfall methodologies. This approach helped

a lot in getting key information and detailed specifications during the initial stages without being rigid when it comes to implementation and feedbacks to development. The project development process was divided into distinct phases: These are requirement analysis, system design, implementation, testing and system deployment. To supplement the research findings, an online survey questionnaire was developed based on the findings of market research, key attributes for a successful online tailoring business were assessed. From discovering, therefore, we scoped functional requirements like user signups, product cataloging, measurement uploads, orders, and admin functionalities and features. The possibilities of using three-tier model of system architecture were implemented in the system: there are frontend for users, backend for providing logic on the server side, as well as database for storing data. The frontend was of course designed using HTML, CSS, and JavaScript to enable responsiveness to user inputs. The backend was designed using Node.js with Express for handling the API and MongoDB for handling the complexity of data structure of the users, orders etc. During the design and creation of the application, we followed all the general rules of software engineering, such as modularity, the use of reusable code, and version control. This way, by having a clear vision of the development process and by receiving feedback at stage intervals, there was guaranteed the emergence of a powerful, perpetually growing and scalable platform called Tailor Mama.

3.1.2 Proposed Methodology/ System Design

The entire organizations profile of Tailor Mama is divided into presentation layer which is the frontend, the business logic layer which acts as the backend and finally the data layer which is the database. For the back end we used Node.js with Express and for the database we used MongoDB and the front end was completed with HTML/CSS/JavaScript.

Frontend: Responsible for the graphical user interface and operates through HTML, CSS, JS.

Backend: Pays for our back-end process and issues APIs and authentication and data processing and is written in Node.js and Express.

Database: Stores user data and information, products and services offered, orders, and measurements in MongoDB.

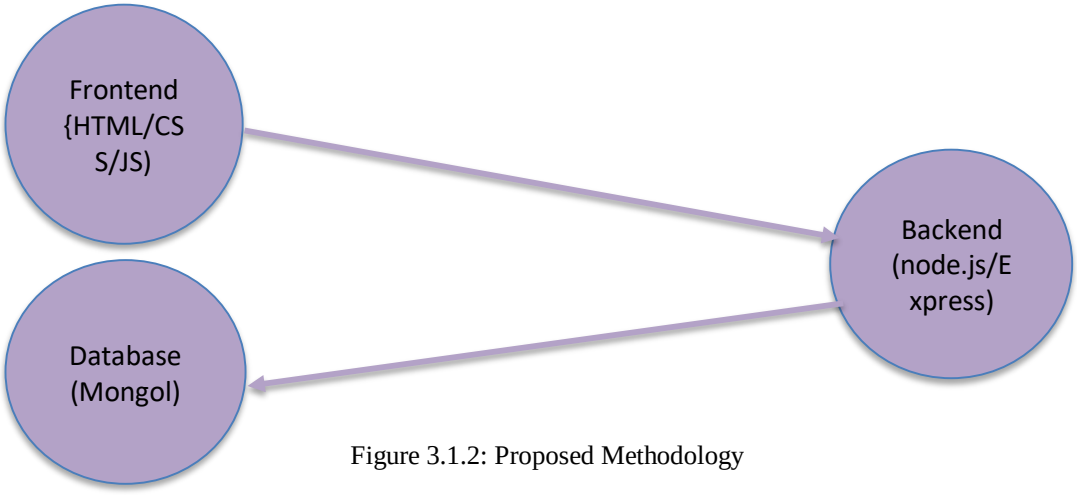

Figure 3.1.2: Proposed Methodology

3.1.3 Functional and Nonfunctional Requirements

By virtue of observations from user interviews, market trends and competitor analysis, we undertook a detailed requirement assessment. The main requirements were divided into functional and non-functional categories:

Functional Requirements

- User registration and login.
- Product search and sorting.
- Submission for measurement of the custom tailoring.
- Ordering of products, payment for the products and the status of the order.
- Pages for administration of products and orders.

Non-Functional Requirements

- The ability to accommodate various amounts of users.
- Privacy for the user information and the transactions being processed.
- Power users saving PC resources for rendering and rendering speed; quicker loading time of the rendered images.
- Cross platform applicability (Responsive Design).

3.1.4 Context Diagram

Context diagram gives an idea of how the system will look and interacts with other entities outside the system. Below is the context diagram for the "Tailor Mama" project that shows how the system interface with users, tailors, administrators and payment gateways. It also shows the traffic of information about the users including registration, orders placed, body measurements, and payment information. This type of diagram is crucial when it comes to helping the various stakeholders understand where the system begins and where it ends and how various entities interact within the defined scope of the system.

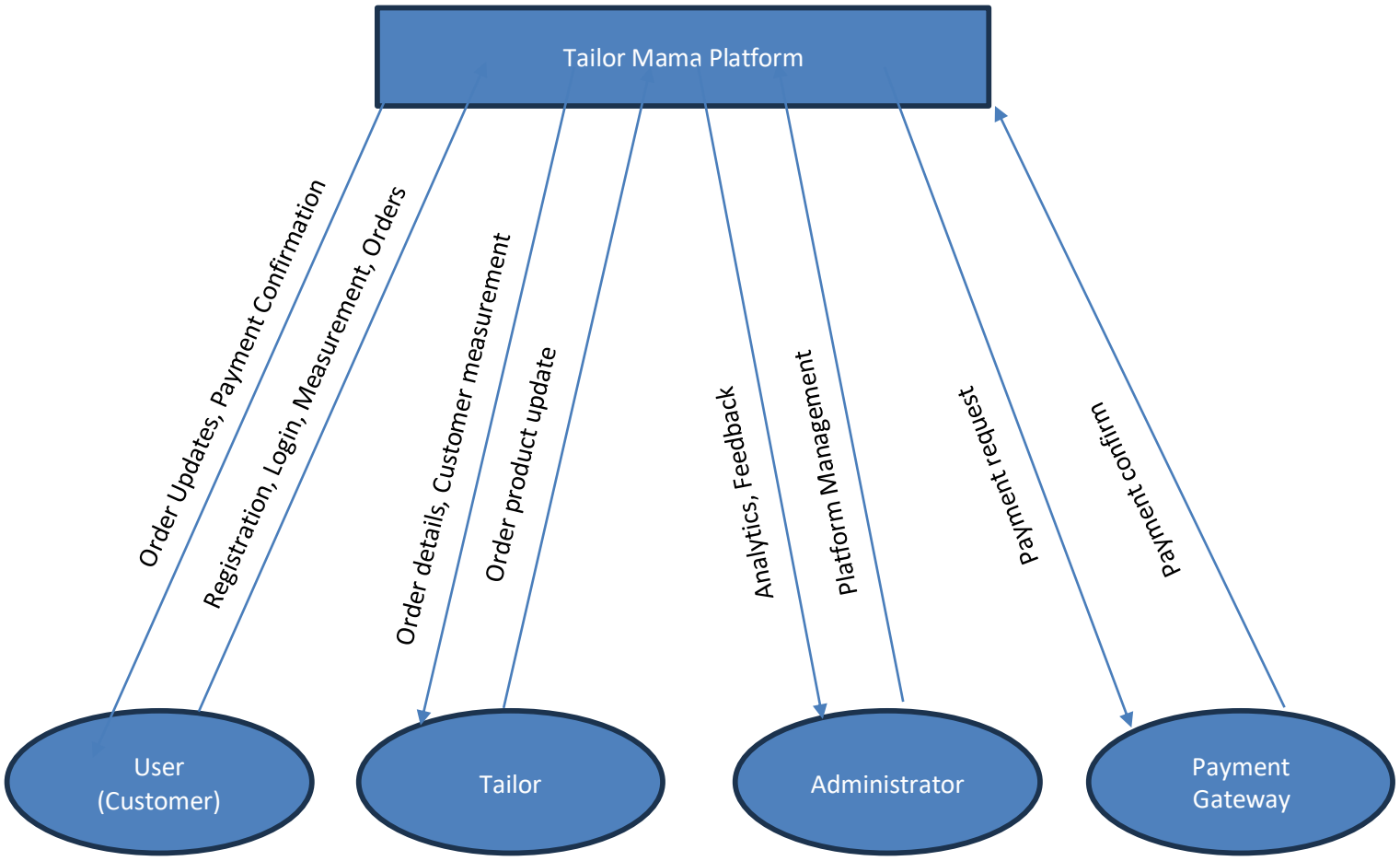

Figure 3.1.4: Context Diagram

3.1.5 Data Flow Diagram

Data flow diagram (DFD) is a graphical representation of the structural implementation of data in the "Tailor Mama" system. So, it emphasizes on what goes on inside the confines of the system, what is stocked and how sub systems of the large system interact with elements outside the boundary of the big system. In the "Tailor Mama" project, the DFD captures important processes such as user registration, placing orders, storing of required body measurements and payment processing. This makes it easier to understand how data is going to be utilized logically and it makes it easier to design and implement.

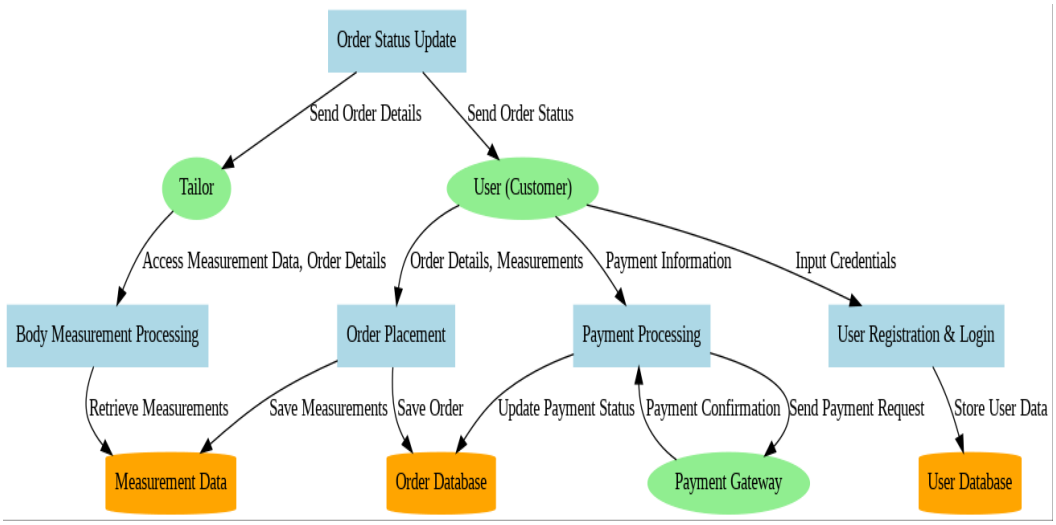

Figure 3.1.5: Dataflow Diagram

3.1.6 UI Design

UI Diagram of "Tailor Mama" is the design and structure of the looks and feel of the platform. They include basic pages or sections like the home page, sign up, login, order process and payment page. This kind of diagram makes it possible to plan the user journey and also makes it easier to illustrate the way the users access the front-end aspects of the system. It makes certain that the actual interface is user interactive, friendly and also efficient.

At the front page of our website, you can find their aesthetic collection of our clothing product. Our achievement, blog, customer feedback, business site, contact number etc. you will find in our front page.

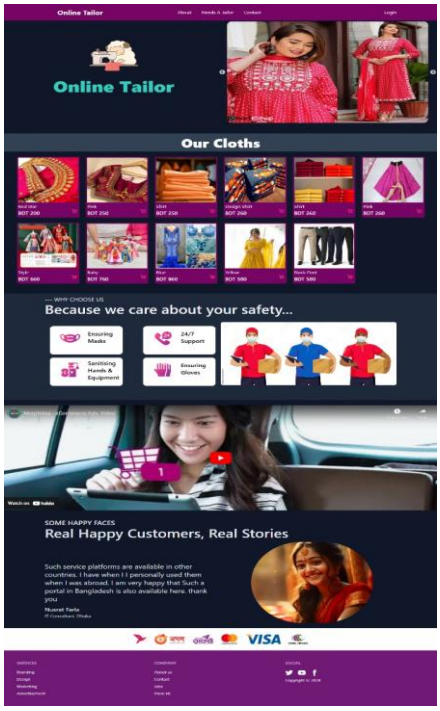

Figure: 3.1.6.1: Front page.

Figure: 3.1.6.2: About Us page

To use this awesome service, you need to sign up in our website with your valid information.

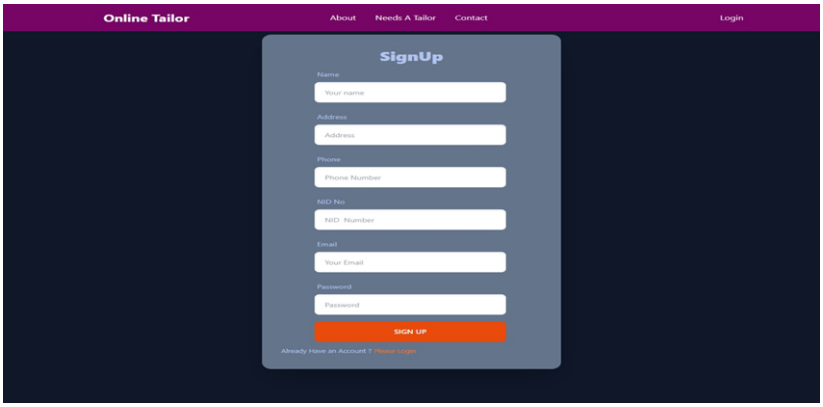

Figure: 3.1.6.3: Sign Up page

After signup you will get a confirmation email. Then you have to login in our website with your valid account.

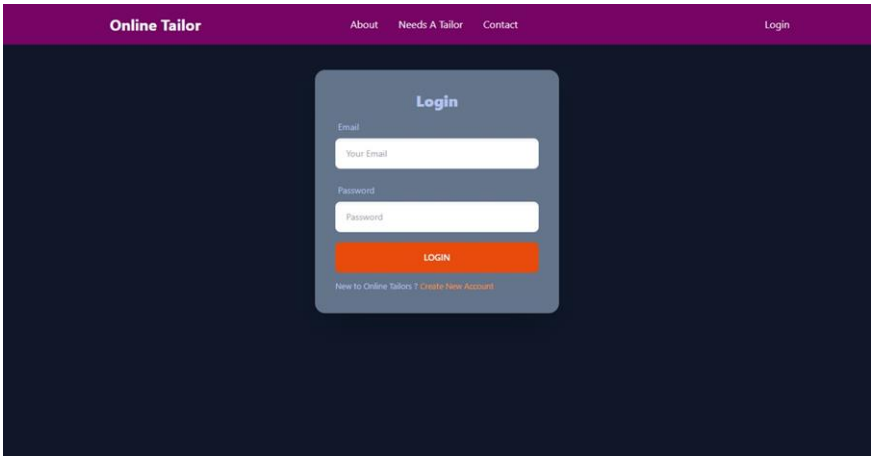

Figure: 3.1.6.4: Login page

Front-End Design

The frontend design mainly works to develop an interface that will properly provide an optimum interaction interface. The design elements include:

Users' pages: The graphical user interface is created using HTML, CSS and JavaScript with the use of a responsive design to suit client devices.

Homepage: The homepage contains a welcome message, special offers, and links to product groups. For ease of identification the featured products are rotated in a carousel format so that they can be easily seen.

Figure: 3.1.6.5: Home page

Product Page: This page contains photos and descriptions of every piece of clothing along with the cost of each article of clothing, the size and type of cloth with which it was made. Customers reach the Web site and can either choose a specific size or select 'custom order', which takes them to the measurement submission form.

Figure: 3.1.6.6: Our Cloth page

Measurement Form: Input fields characteristic for the selected measurement form contain the description of the used body dimensions with the visual support in the form of pictures and subdivision into steps. The most common one is validation checks that you see below the form, that all necessary measurements need to be given before the form can be submitted.

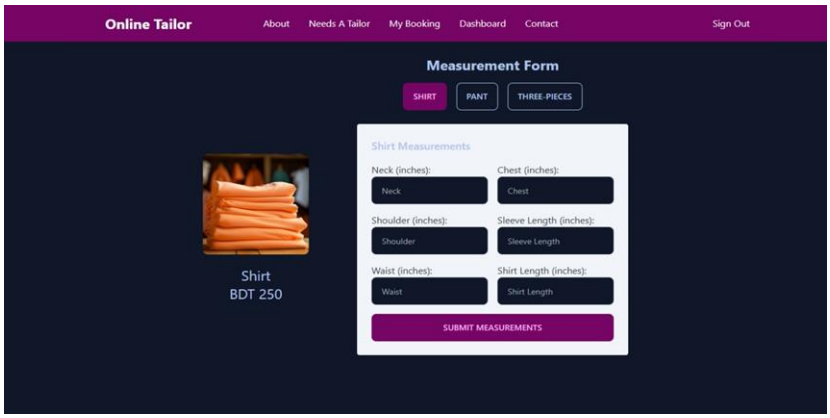

Figure: 3.1.6.7: Measurement form page

My Booking: The features on the shopping cart include selected items, quantity, price, total cost, options to edit or delete a particular item/type. The payment page is very flexible and allows payments on several modes and asks the user for the shipping details.

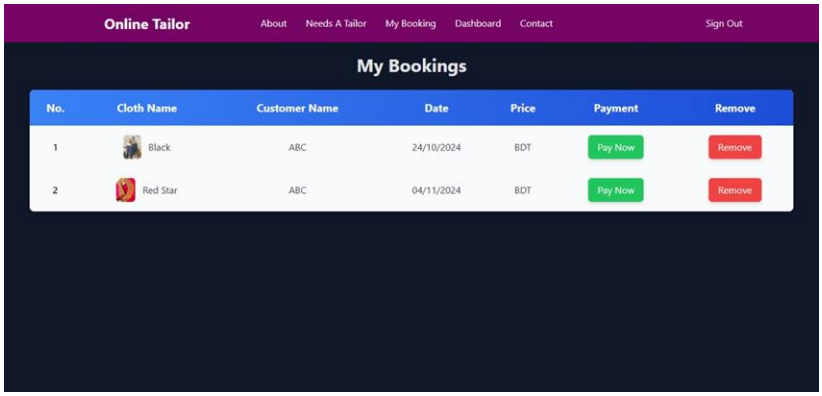

Figure: 3.1.6.8: My Booking page

Payment Method: The payment method in "Tailor Mama" is also chosen to be highly convenient for users and also secure. Customers can pay multiple methods, which are through credit/debit cards, internet banking, mobile financial services such as bKash and Nagad etc. The payments are safe due to the employed encrypted payment platforms. Also, there is an option 'Cash on Delivery' for those individuals who do not like online payments. Payment status is made immediately available on user's accounts for transparency, as well as to make the transaction systems smooth for the buyers and the tailors.

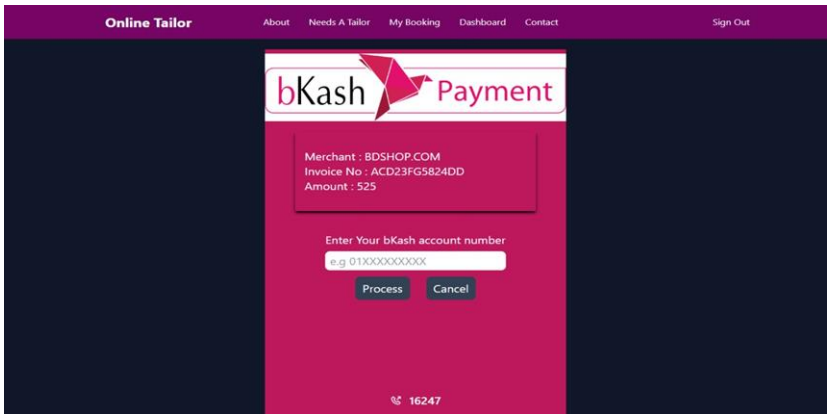

Figure: 3.1.6.9: Payment Method

Contact Us: Customer can contact with us in their any kind of clothing problem even can suggest us some good feature for them by this CONTACT US form.

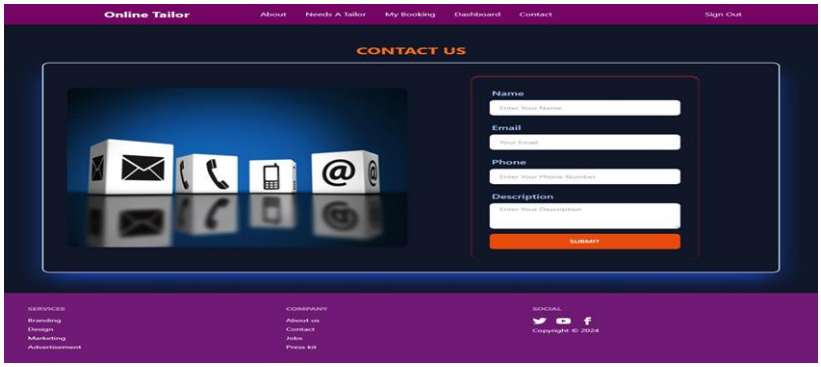

Figure: 3.1.6.10: Contact Us page

The frontend design takes advantage of CSS frameworks such as Bootstrap in order to develop a responsive interface that works well in devices of different dimensions. Various browsers such as Chrome, Firefox, Safari and across devices including desktop, tablet and mobile is the current standard and the user interface is tested accordingly.

Admin pages: Admin manages the business system of our online tailoring.

Manage Product: An admin also has to use their valid user Id and password to login in the website. Mainly an admin handles all the updated product, taking order, delete product and all kind of managemental job.

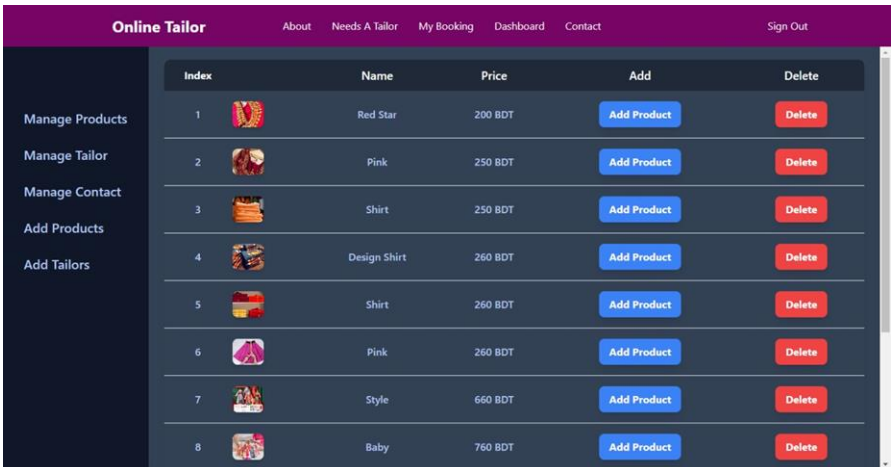

Figure: 3.1.6.11: Manage Product page

Manage Tailor: Admin can manage a tailor with discuss him face to face and assign him as a tailor for specific product

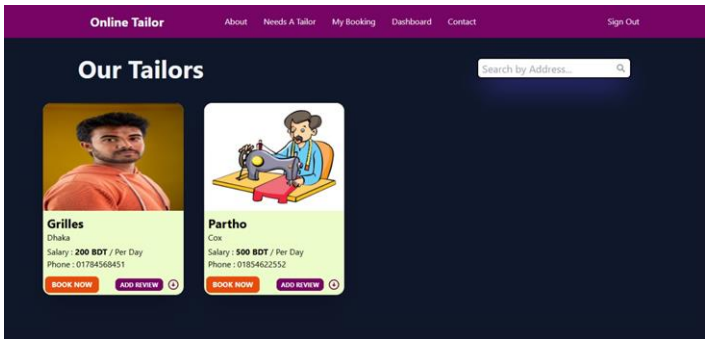

Figure: 3.1.6.12: Manage Tailor page

Manage Contact: If a customer wants to contact with us, they can do it very easily. Our admin panel handles this.

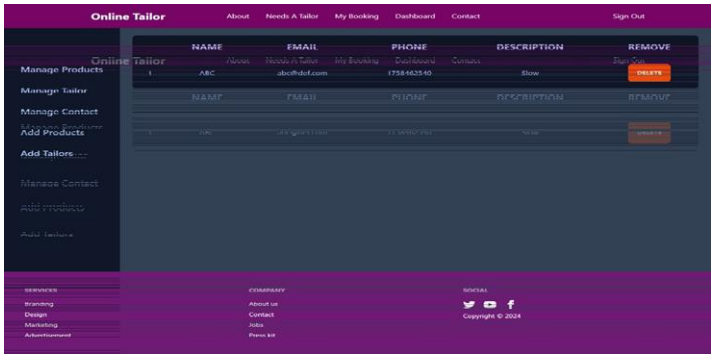

Figure: 3.1.6.13: Manage Contact page

Add Product: To add a product in user interface the admin has to fill up this ADD A PRODUCT from by needed information.

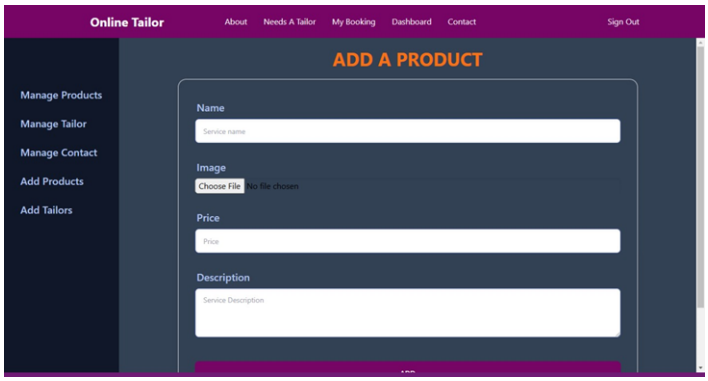

Figure: 3.1.6.14: Add Product page for Admin

Add Tailor: To assign a tailor the admin has to fill up this ADD A TAILOR form by needed valid information.

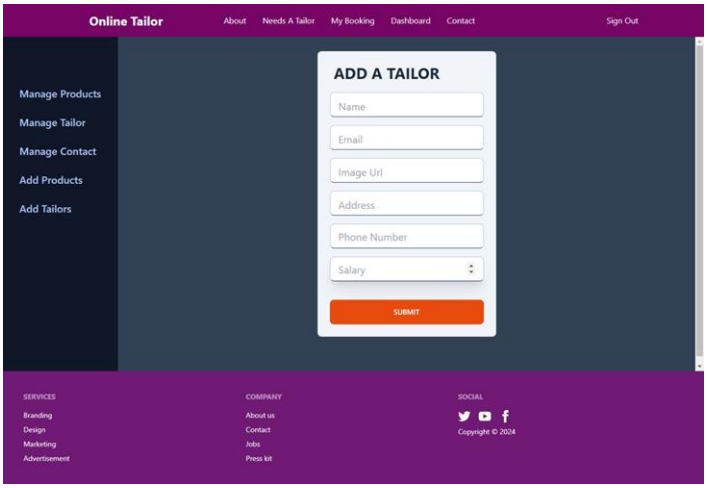

Figure: 3.1.6.15: Add Tailor page

3.2 Detailed Methodology and Design

After the introduction of the Tailor Mama online tailoring platform, the design and implementation of the online tailoring system proceeded in a thoroughly planned manner to make it more stable, reliable, and efficient since many clients were expected to use the platform as time went on. The design of the project was done with the principles of the user's requirement, the difficulty involved in customization and the technology stack in mind that would support these features. In the following, the general approach used is described, the main aspects which influenced the design and alternatives under consideration during the development process are presented.

3.2.1 Project Methodology

The project was implemented through the use of the Agile Development Methodology. Agile was chosen because it is specifically conducive to incremental methods of development or the creation of prototypes and adaptation of development to changes in requirements. Since customer needs are constantly changing in the tailoring industry, Agile allows us to Saty that we can easily adapt to the feedback and any changing demands as well.

The development process was broken down into the following key steps:

Requirement Gathering and Analysis: It was also easier to have initial talks with potential users regarding the project to determine features such as simple registration, placing an order, and inputting their body measurements, and secure payment options. Competitors and surveys defined the requirements of target users even more as they revealed the flaws of the current online tailoring services. Competitor analysis and surveys added more to the requirement definition by identifying with many weaknesses of current online tailoring services.

System Design and Architecture: For collecting the user data, orders, measurements as well as payment information, the use of the relational database was appropriate. This

structure involves data integrity and easy retravel since the applications are anchored to relate to individual users. The front-end was developed with a principle of user-interface design (UI) so that the users could understand where to enter the various measurements. The back-end of the system was implemented in Python and Django, a WEB framework to support rapid development. Some of Django features like, authentication, Object-relational mapping made it proper to handle user data securely and more efficiently.

Development and Implementation: Developed in iterations, each sprint focused on user registration, login, ordering, measurements' calculation, and payment interfaces. Such practices as Continuous integration & testing were followed so that there was always confirmation that everything from one module was working correctly before the next was touched.

Testing: System Integration Testing: Every unit and integration phase had test performed through Unit and Integration testing. This was helping to early detect bugs, to have confidence that the system is stable.

3.2.2. Design Considerations

Several aspects were considered when designing the architecture of the Tailor Mama platform, aspects that would create a smooth simplified operation for the end user but at the same time allow for efficient and power administrative control.

User Interface (UI) Design: It means that the user interface has been kept simple, visually appealing, and the website was built to responsive web design. As many consumers may likely be using their mobile devices to access the platform, the layout also emphasizes using the mobile-first design. Well defined calls to action (CTAs) were placed on the homepage in order to help the user navigate to the various features such as registration, login or place an order. In order to improve face and ecological validity, the measurement input forms used in this study were developed to be easy to fill in and included directive and validation questions to facilitate accurate measurements.

Database Design: A user database and other supplementary databases for body measurements, orders, and payments were developed as Relational ones. This decision was arrived at because a relational database enables data to be stored in a structured format and contains sophisticated relations between users, orders and measurements.

Normalization was done to enhance the structure of the database and reduce dependency. The key entities in the database included: Users, Orders, and Products as well as Measurements.

Security Design: The need to protect the privacy of users and their payments was one of the main concerns whenever developing the application. For security we set HTTPS, and for passwords we used crypt. As for the payment processing, to avoid any hacks, we included a third-party payment gateway for using (Stripe vs. PayPal)

3.2.3 Alternative Solution Consideration

During the design and development process, several alternate solutions were considered

for different aspects of the system, and the reasons for the chosen solutions are outlined below:

Back-End Framework: Flask vs. Django. Flask is much lighter in weight than web2py compared to Django and it is also less rigid where we have to write less code for the User Authentication and Database operations which has to be done manually. Django. Django was chosen because it has a set of features built in, including authentication and Object Relational Mapper (ORM) thus simplifying the process of implementing secure user login and registration, as well as efficient database management. Another important issue that is crucial to this project's success and that also concerns Django is the ability to work intensively, focused and modular approach that allows to complete the project successfully.

Database Type: MySQL vs. PostgreSQL. MySQL is yet another popular relational database and shared (community) version is available with great community support.

Thus, the choice fell on PostgreSQL due to better parameters like concurrency control and full text search. MySQL. MySQL was selected for the reliability, broad support, implementation of the necessary operations, and ease of use with the present application and simplified relational data model.

Payment Gateway: Stripe vs. PayPal. A popular and familiar merchant service is PayPal, which is also safe, especially if used for cross-border purchases.

Stripe is more integrated with modern Web apps and has a more friendly API and somewhat cheaper transaction commission. Stripe. Most developers love Stripe for integration, having a contemporary API, and the fact that it can grow along with the platform.

Front-End Framework: React vs. Vue.js. When it comes to creating UI for business applications architecture JavaScript React is one of the most successful and fast frameworks. Vue.js is the JavaScript Framework that has progressive features and easier than other commands, perfect for small projects is best for two-way data binding. React. React was selected because of its huge community backing, structural components, and its capacity to develop efficient, bendy UIs.

3.2.4 Why the Selected Solutions Were Chosen

The selected solutions were chosen based on several key factors:

Ease of Use and Speed of Development: Django, MySQL, and React were selected because they are mature, well-documented technologies with a wealth of resources and community support. This helped in speeding up the development process and reducing the time spent on debugging and troubleshooting.

Scalability and Flexibility: Django's modularity, React's component-based architecture, and MySQL's scalability ensure that the system can grow with increasing user traffic and more complex features in the future.

Security: The chosen stack provides excellent security features, such as Django's built-in user authentication and the integration of secure payment gateways, ensuring that

sensitive user and financial data is handled safely.

Performance: The chosen solutions are optimized for performance, ensuring fast load times and smooth user interactions, crucial for maintaining a positive user experience.

3.3 Project Plan

It is true that project plan is crucial for steering the project and program in general and for delivering it on time with the desired quality. Prior to implementing the project, Tailor Mama's project schedule captures all the details for the project development life cycle: key activities, timeframes, tasks and the resources necessary to take the project from conception to delivery. The aim of the project is to help the consumers to design the clothes online, to buy clothes online, and to input their measurements online.

3.3.1 Project Objectives

- A website that enables the users to choose fabrics for their clothes, enter measurements, and order made-to-measure wear online.
- Offer an easy to navigate and optimized design to enhance interaction across the devices.
- Make sure user payment methods and personal information safety for transactions in the platform.
- Construct the customer orders processing system, product inventory system and order tracking system that can help in delivery of orders.
- Start the system with certain features and then continue to release updates of the system with new features informed by the users.

3.3.2 Project Scope

- **User Registration and Authentication:** Users can register and create an account for them, change the login information and personal details.
- **Order Placement:** Consumers can make orders by choosing fabrics of their preference and by giving their correct measurements.
- **Payment Integration:** The system will link with well-protected payment processing solutions including Stripe for execution of payments.
- **Admin Dashboard:** The software will have an admin section for order, users and product navigation.
- **Responsive Design:** Using this feature, the web application will be able to support fine, both on devices that are in mobile format and those in the larger, desktop format.
- **Security:** Encryption and protected format for data exchange will protect users' personal information and deter hackers.

3.3.3 Project Phases and Timeline

It is in a series of phases where each phase has a well-defined objective and products that are more easily admissible than a single large project.

Task	Weeks																	
project Initiation and Requirement Gathering	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	28
System Design & Development																		
Testing and debugging																		
Deployment & Post-Launch and Maintenance																		

3.4 Task Allocation

Team Members and Responsibilities

Project Manager: Oversees the development process, ensures timelines are met, and coordinates between team members.
Frontend Developer: Designs and implements the user interface, ensuring it is responsive and user-friendly.
Backend Developer: Handles the development of the server-side logic, database design, and integration with the frontend.
UI/UX Designer: Creates the wireframes, prototypes, and overall design aesthetic of the application.
Quality Assurance (QA) Tester: Responsible for testing the application's functionality and reporting bugs or issues.
Security Expert: Ensures that the platform follows security best practices, particularly for payment integration and user data encryption.

Tools and Technologies
Frontend: React.js, HTML5, CSS3, JavaScript
Backend: Django (Python), MySQL for the database
Payment Gateway: Stripe or PayPal
Version Control: GitHub or GitLab
Project Management Tools: Jira, Trello
Testing: Selenium, Postman for API testing
Hosting: AWS, Heroku, or DigitalOcean

3.5 Summary

Concisely, this Tailor Mama incorporated the elements of the Agile approach into a more structured yet flexible project management system. The elaborate conception stage allowed for materializing a comprehensive list of demands and choosing a coherent pattern of development; the numerous cycles of elaboration let make adjustments and improvements according to the users' input. Substantial effort was made to consider scalability, reliability, and security aspects in the architecture of the

project with the help of Node.js as the back-end language, the scalability of MongoDB as the data base, and responsive web design for making the interface as friendly as possible. The function was important when it came to weighing between the costs of carrying out developments that would generate the following revenues. Thus, it was possible to exclude the costs associated with the acquisition of new technologies or the maintenance of our own data centers during our work, staying open-source and using cloud services instead. The elaborated marketing strategy and orientation on the user satisfaction are anticipated to result in user acquisition and revenues, providing a basis for the platform's sustainability. This paper established that the project management and financial management strategies offered the necessary templates for the successful implementation and deployment of the Tailor Mama platform. In the further works, the focus would be paid to the maintenance plan and user feedback mechanisms to guarantee the constant improvement of Tailor Mama as the reliable and user-friendly product in the further development of the online tailoring market of Bangladesh.

CHAPTER 4
IMPLEMENTATION AND RESULT

This chapter provides an understanding of the environmental scenario, test approaches, assessment of the project, assessment of performance, and results during the development of the Tailor Mama project. It talks about the testing aspects, performance and comparative aspect of the system and displays the result that depicts how efficient the system is.

4.1 Environment Setup

A cutting-edge technology stack that guarantees scalability, adaptability, and security was used in the development of the Tailor Mama platform. Both the development and production environments have to be configured as part of the environment setup. The main procedures for configuring the environment are listed below:

Operating System: Although the application is cross-platform and can run on Linux and macOS, Windows OS was used for the majority of development.
Backend: Django, a web framework built with Python, was used to create the backend. For quick development and safe user management, Django's powerful features—like its ORM (Object-Relational Mapping) and integrated authentication system—were essential.
Frontend: JavaScript, HTML5, CSS3, and React.js were used in the frontend's construction. React.js was selected due to its effectiveness in creating dynamic user interfaces that offer real-time changes and a seamless user experience.
Database: MySQL is the relational database management system (RDBMS) used in this project. User information, product details, and order information are safely stored in the database.
Payment Gateway Integration: Stripe was incorporated into the platform to enable safe transactions. Stripe guarantees the security of user transactions and makes payment processing simple.
Version Control: GitHub served as the repository for managing and storing the code, while Git was utilized for version control. This made it possible for developers to work together and track changes with ease.

4.2 Testing and Evaluation/Performance/ Comparative Analysis

Testing is an essential step in the development process since it guarantees that the platform satisfies the requirements and operates as intended. To assess the system's usability, performance, and functionality, a multi-stage testing procedure was conducted.

Examining functionality

The goal of functional testing was to confirm that every application feature operated as intended. Among the important areas examined were:

Ensuring that users are able to register, log in, and manage their profiles. Confirming that users were able to choose items, enter dimensions, and complete orders. Ensuring seamless payment processing integration with Stripe. Examining the administrative features for handling user accounts, orders, and products.

Evaluation of Performance

To evaluate the system's response time and handling of user traffic under various load scenarios, performance testing was carried out:

The system's capacity to manage numerous users putting orders at once was assessed by simulating high traffic. To make sure the system reacted in a reasonable amount of time, the time required for different operations (such as loading the homepage or making an order) was measured. The system's ability to accommodate a rise in users and data without seeing a drop in performance was examined.

Testing for Usability

A limited sample of the intended users participated in usability testing. The platform's overall user experience, navigational ease, and design were all evaluated. Making ensuring the platform is intuitive and easy to use was the aim.

Evaluation via Comparison

The Tailor Mama platform was compared to other comparable online tailoring services that are currently on the market. Among the important factors compared were:

In comparison to rivals, Tailor Mama provides a simpler, easier-to-use interface. Tailor Mama's body measuring input system was more intricate, giving users more options for personalization. Compared to competitors' more intricate payment procedures, Tailor Mama's Stripe connection was praised for being straightforward and secure.

4.3 Results and Discussion

Several important conclusions emerged from the testing phase:

Every essential feature of the site, including order placement, login, user registration, and payment processing, was successfully put into use and tested. The platform was simple for users to use, and the system operated as it should have. Up to 500 users could access the platform at once without experiencing noticeable performance issues, which is sufficient for initial deployment. The server resources can be upgraded to increase future scalability. Most consumers find an average page load time of two to three seconds to be ideal. This was made possible by the optimized backend code and the effective use of React.js. Stress testing revealed that the platform can be expanded by merely expanding server capacity using AWS, demonstrating that the system was built with scalability in mind. The site was straightforward to use, according to user comments from usability testing, with the measurement input from receiving special recognition for its clarity and simplicity. Future updates might take into account user suggestions for further customization choices regarding fabric types and garment styles. When compared to other online tailoring alternatives, the comparative analysis showed that Tailor Mama provides better personalization features, an intuitive user interface,

and a smooth payment process. Tailor Mama now has a distinct value proposition and is positioned as a competitive participant in the market.

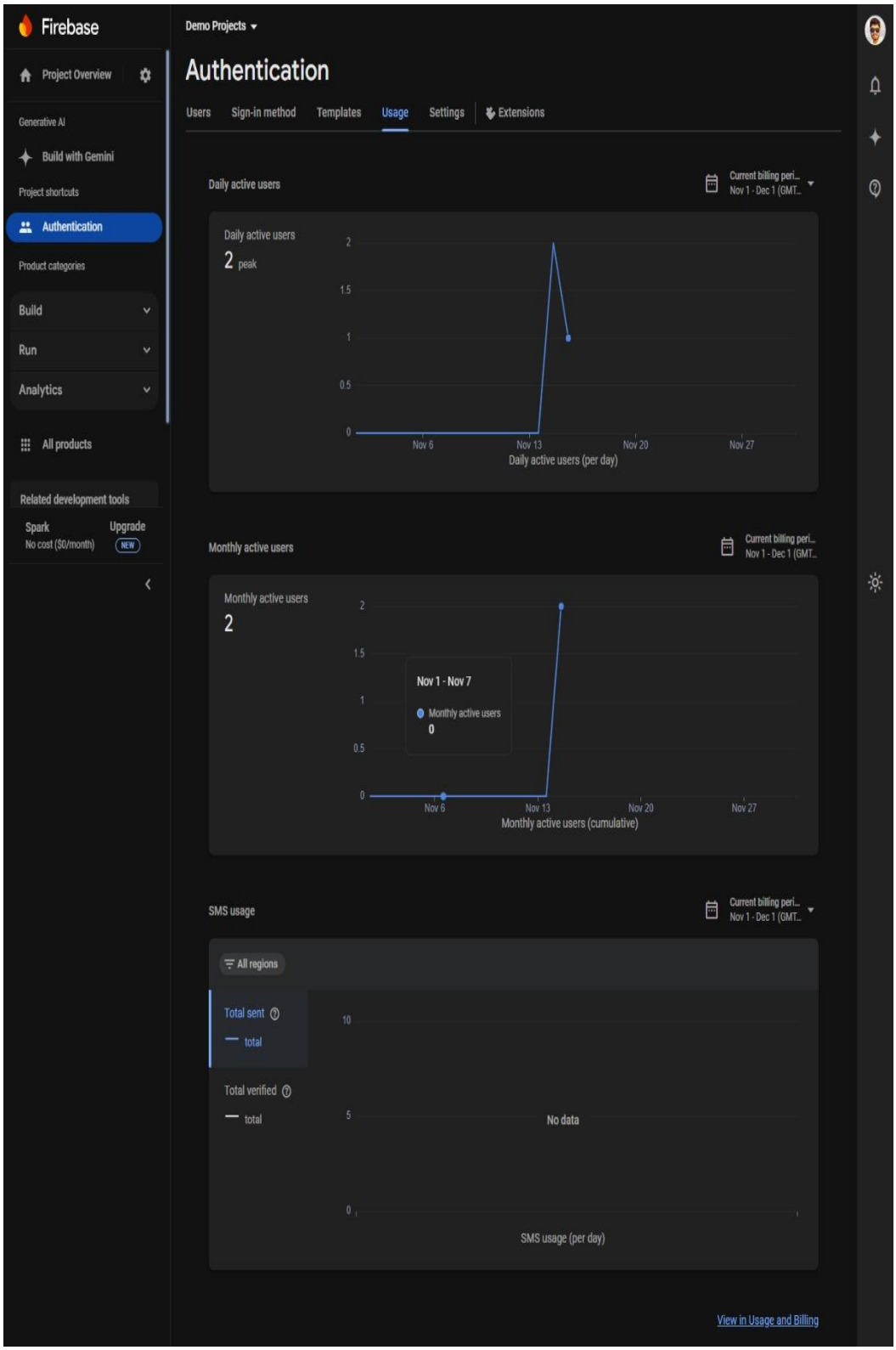

Figure: 4.3.1: Using Rate of Users

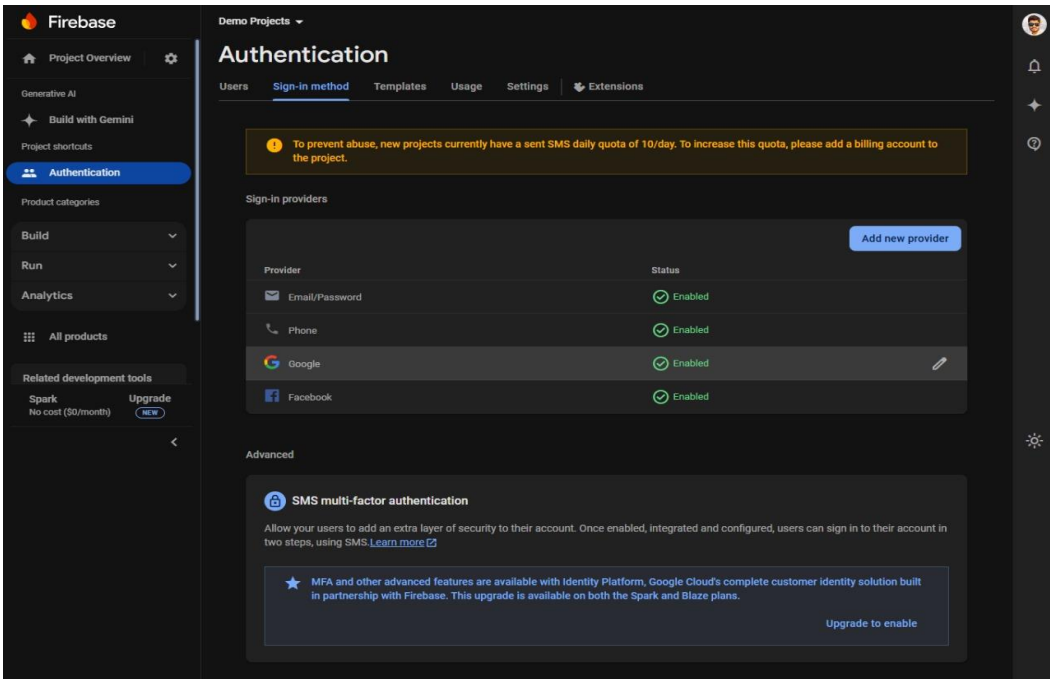

Figure: 4.3.2: Sign-in-method

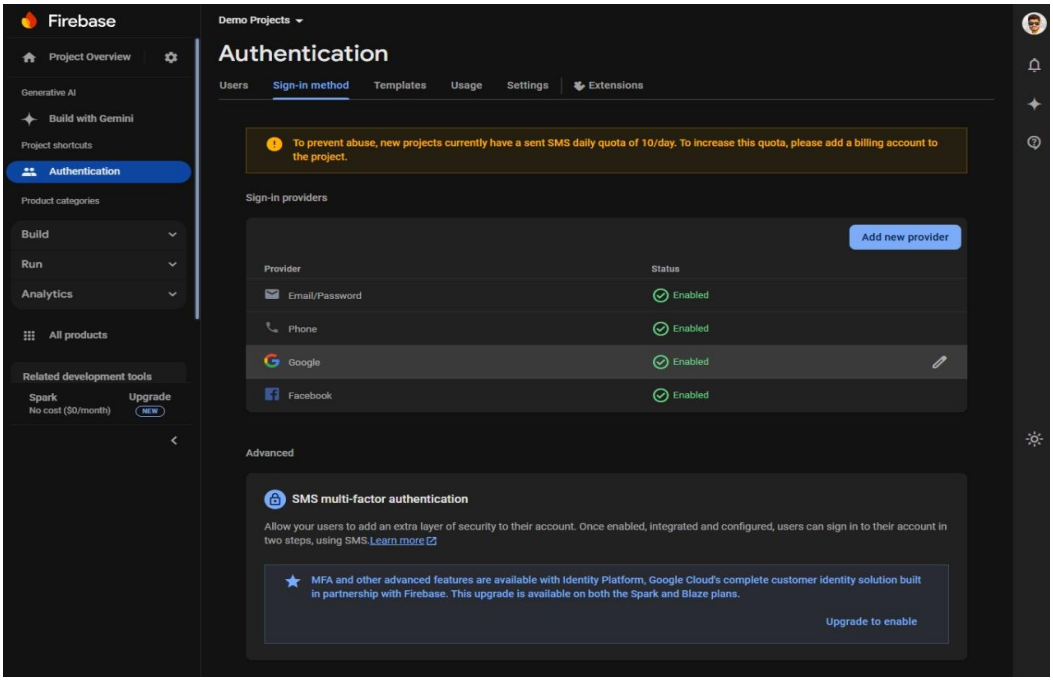

Figure: 4.3.3: Templates

4.4 Summary

We covered the whole environment setup needed for Tailor Mama's development and implementation in this chapter. Functional, performance, and usability testing were all part of the thorough testing procedure, which made sure the platform fulfilled all requirements. The system was scalable for future expansion and could manage modest traffic, according to the performance findings. Furthermore, the comparison investigation revealed that Tailor Mama performs better than rivals in a number of crucial areas, such as payment convenience and customization. This chapter emphasizes how crucial thorough testing and assessment are to producing a high-caliber product that satisfies consumer and commercial demands. The platform's functionality and competitiveness will be further improved in the future based on user input and testing insights.

CHAPTER 5
ENGINEERING STANDARDS AND DESIGN CHALLENGES

5.1 Compliance with the Standards

Following accepted technical standards was essential to guaranteeing the Tailor Mama platform's dependability, security, and effectiveness. The project's hardware, software, and communication components all adopted these standards.

5.1.1 Software Standards

Software standards guarantee that best practices for quality, security, and maintainability are followed during the development process. The software standards listed below were put into effect:

- ISO/IEC 25010: This standard was used to evaluate software quality, focusing on usability, security, and performance.
- OWASP Security Guidelines: The platform adhered to OWASP standards to protect user data from vulnerabilities such as SQL injection, cross-site scripting, and data breaches.
- Agile Development Practices: Agile methodology was followed for iterative development, with periodic reviews ensuring that the software met user requirements and quality benchmarks.
- Coding Standards: PEP 8 (Python) and W3C (HTML, CSS) standards were followed for clean, consistent, and maintainable code.

5.1.2 Hardware Standards

Despite the fact that the project does not directly involve physical hardware, the hosting infrastructure has to adhere to hardware standards:

Server Standards: AWS servers that meet SOC 2 for secure cloud infrastructure and ISO/IEC 27001 for information security were chosen.
Energy Efficiency: The application's data centers use less energy by adhering to ISO 50001 and Energy Star requirements.

5.1.3 Communication Standards

Communication standards guarantee secure data transmission and smooth interaction between different components:

HTTPS Protocol: To ensure data integrity and secrecy, all user-server connection is encrypted via HTTPS.
RESTful APIs: A modular and scalable architecture was provided by adhering to RESTful API standards for front-end and back-end communication.
Payment Gateway Standards: To guarantee safe payment transactions, Stripe, the integrated payment gateway, conforms with PCI DSS (Payment Card Industry Data

Security Standard).

5.2 Impact on Society, Environment and Sustainability

The Tailor Mama platform has been designed with a strong focus on societal impact, environmental considerations, and sustainability. This section evaluates the broader implications of the project.

5.2.1 Impact on Life

Users, companies, and the tailoring community are all greatly impacted by the platform: By allowing customers to order custom-made apparel online, the platform removes the need for in-person trips to tailoring shops. It saves time and effort by streamlining the process of tracking orders and supplying body dimensions. The platform gives local tailors more chances to earn money and expand their businesses by introducing them to a wider range of clients. Startups and small tailoring companies gain from a digital marketplace, which makes them more competitive in the contemporary market.

5.2.2 Impact on Society & Environment

Impact on Society

By offering clients easily accessible, customizable, and convenient clothing options, Tailor Mama empowers its clientele. Multiple in-person visits are necessary for measurements and fittings in traditional tailoring, which is frequently difficult and time-consuming. Tailor Mama removes this obstacle by providing a website where visitors can. They can purchase ready-made apparel while lounging in their houses. For clothing that is precisely customized, they can enter their body dimensions online. Get delivery right to your door to cut down on commute time. For people with hectic schedules, traditional tailoring may not be feasible due to time constraints. Families do not need to visit tailors to order personalized apparel for ladies and children. Premium services are now available to clients in rural locations, where there is little availability to high-quality tailoring services. The site connects local tailors with a wider audience, giving them a chance to reach a wider audience. In Bangladesh, a large number of talented tailors have always worked in small communities with little opportunity to reach new clients. By building a bridge, Tailor Mama enables these tailors to display their abilities on a web-based platform. Obtain steady orders, which increases their financial security. Grow their company without spending money on actual shops. Tailor Mama encourages small businesses and creates jobs by incorporating local tailors into a digital ecosystem. Despite Bangladesh's fast digitization, many facets of the population still do not have access to internet services. In order to encourage digital inclusion, Tailor Mama teaching consumers the advantages of using internet services. Supplying an intuitive user interface that even those with little technological knowledge may use with ease. Ensuring accessibility for non-native English speakers by providing multilingual help. The majority of tailoring services are used by women, especially for traditional garments like lehengas, salwar kameez, and sarees. Women are empowered by Tailor Mama through letting them choose their own personalized attire. Saving time and effort, especially for women who work and stay at home. Allowing women to take

measures from the comfort of their own homes in order to protect privacy.

Impact on Environment

Several journeys to the tailor are frequently required for the traditional tailoring procedure, which raises carbon emissions and fuel consumption. Tailor Mama considerably lessens this impact on the environment by submitting measurements online and having them delivered right to your home, in-person visits are no longer necessary. Promoting environmentally friendly delivery methods by means of efficient logistics. The following are some ways that the platform encourages sustainability. Tailor Mama eliminates tailoring errors and lowers the possibility of discarded clothing by enabling consumers to input exact body measurements. Tailor Mama's bespoke tailoring guarantees that clothing is made solely upon request, eliminating unnecessary inventory and textile waste in contrast to mass production in the ready-made garment industry. Tailor Mama reduces paper use and promotes environmentally friendly practices by implementing digital procedures for communications, order confirmations, and invoices. In order to promote ethical fashion choices, Tailor Mama hopes to collaborate with suppliers who provide eco-friendly materials and sustainable fabrics in the future.

5.2.3 Ethical Aspects

Tailor Mama makes sure that its platform complies with moral guidelines by emphasizing. All user information, including private measurements, is encrypted and stored safely.

The platform conforms with laws pertaining to data protection, including GDPR.

Service providers and tailors that collaborate with the platform receive just compensation for their labor. There is no worker exploitation when prices are transparent. The platform places a high priority on inclusivity, making sure that users with limited internet connection or disability may still take advantage of the service. Trust between the platform and its users is ensured by transparent disclosure of prices, delivery schedules, and policies.

5.2.4 Sustainability Plan

Tailor Mama uses tactics to guarantee its long-term viability while encouraging socially and environmentally conscious behavior. The platform's modular architecture makes it simple to scale to meet the needs of expanding geographic coverage, more product offerings, and growing user numbers. Future plans call for using cutting-edge technology like artificial intelligence (AI) for tailored recommendations and augmented reality (AR) for virtual try-ons. Tailor Mama intends to work with vendors and companies that value sustainable and environmentally friendly operations, guaranteeing the use of morally sound materials. A percentage of the profits will be used to fund community programs like digital literacy promotion, sustainable fashion support, and tailors' vocational training. Frequent user input will aid in platform improvement, guaranteeing its continued relevance and use.

5.3 Project Management and Financial Analysis

The Tailor Mama project was well implemented mainly through the consideration of the project management aspect. In order to maintain the principals of timely delivery and high quality of work, the project was carried out under Agile development methodology with two weeks work sprints. This methodology provided the opportunity for daily feedbacks, as well as the ability to organize users' needs and focus on possible problems that may occur during creating the application.

5.3.1 Project Phases and Milestones

Some of the action we took included engaging in preliminary market analysis as well as common user research in order to be able to gather certain information that would help in the formulation of goals and objectives for the project. The analyses of stakeholder requirements resulted in comprehensive specifications of functional and non-functional requirements. The main systems architecture has been defined during this phase, as well as detailed design of the front-end, back-end as well as a database architecture. Implementation phase details were provided by the flowcharts, ER diagrams and class diagrams. The development phase was divided into several iterations with each iteration having its target features including the user's registration, product posting, measurement contribution, and payment gateway incorporation. Version control was done via Git since it facilitates multidirectional group development and tracking of code updates. The testing as well as the development strategies are well orchestrated; unit testing, integration testing and User Acceptance Testing (UAT) was conducted to meet the validity and security of the systems. Changes were made to the system throughout the user testing through feedback collected to enhance the features of the system and to provide the user with the best possible experience while using the system. The last was hosted on a cloud environment (it can be AWS or Heroku) because scalability is important here. Therefore, maintenance plan entailed constituting routine update, performance assessment, as well as user cares.

5.3.2 Financial Analysis

When it comes to the financial management, special attention was paid to optimize the costs so that overall efficiency and quality of development would not suffer. Key financial considerations included. To complete the project a team of developers, designers and testers was recruited. Wages and freelance charges also formed a huge chunk of the expenses. That is why we use free tools, Node.js toolset, and MongoDB is open-sourced and that means that one does not need to pay a lot of money for a license. The budget also considered such costs as project management tools, like Jira, GitHub, cloud hosting services. Parameters for normal operations included costs of cloud hosting services, databases, and data usage costs where these services would be continually required in the long term. 10% of budget was spent on advertising and marketing of the platform so that more users can be tempted to join the platform. There

is the planned commission on the personally tailored product sales, the service fees for alterations, and other services, and possibly, the paid subscriptions for additional advanced functionality. According to the analyses of financial forecasting, it can obtain 15% of ROI from the southern region market within next year of its operating in Bangladesh.

5.4 Complex Engineering Problem

This section addresses the complex engineering challenges encountered throughout the development of the Tailor mama system. The following table 5.4 provides a detailed description of the Course Outcomes and Program Outcomes (COPO) mapping.

Table 5.4: COPO Descriptions

CO	CO Descriptions	PO
Phase -I		
CO1	Integrate recently gained and previously acquired knowledge to recognize sign language for the Final Year Design Project (FYDP)	**PO1**
CO2	Analyze different aspects of the goals in designing a solution for this FYDP	**PO2**
CO3	Explore diverse problem domains through a literature review, delineate the issues, and establish these goals for the FYDP	**PO4**
CO4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the FYDP	**PO11**
Phase -II		
CO5	Design and develop technical solutions and system components or processes that meet specified requirements, ensuring compliance with public health and safety standards, as well as considering cultural, socioeconomic, and environmental factors in this FYDP	**PO3**
CO6	Choose and apply appropriate methodologies, resources, and contemporary engineering and IT technologies to address complex engineering processes, encompassing prediction and modeling, while adhering to relevant constraints in this FYDP	**PO5**
CO7	Analyze societal, health, safety, legal, and cultural considerations, along with associated responsibilities, in the context of professional engineering practice and the resolution of this problem, employing logical reasoning guided by contextual understanding.	**PO6**
CO8	Comprehend and evaluate the enduring sustainability and impact of professional engineering endeavors in addressing intricate engineering challenges within social and environmental frameworks.	**PO7**
CO9	Implement ethical principles and adhere to professional standards and norms in this FYDP	**PO8**

CO10	Capable of operating proficiently both individually and as a team member or leader across diverse teams and interdisciplinary settings in this FYDP.	**PO9**
CO11	Proficiently communicate with the engineering community and broader society regarding complex engineering endeavors, including the ability to comprehend and generate comprehensive reports and design documentation, as well as provide and receive clear instructions throughout this FYDP.	**PO10**
CO12	Acknowledge the importance of self-directed and life-long learning within the evolving landscape of technology, and possess the readiness and capability to engage in lifelong learning endeavors.	**PO12**

5.4.1 Complex Problem Solving

The difficulties encountered throughout these procedures necessitated ongoing iterations and problem-solving in order to optimize the system and guarantee seamless operation under a variety of real-world circumstances. The intricacy of the project and the strong engineering methods employed to solve it are highlighted by the thorough analysis and creative solutions implemented.

The following Table 5.4.1 shows how the Knowledge Profile (K), the Course Outcomes (CO 1–8), and the Attainment of Complex Engineering Problems (EP) are addressed:

Table 5.4.1: Mapping of Complex Problem Solving and Knowledge Profile

SN	EP Definition	Attainment	CO	Justification (with Knowledge Profile)
1.	**EP1: Depth of Knowledge required**	Yes	CO1, CO2, CO3, CO5, CO6, CO7 and CO8	Using Firebase for backend services and Kotlin for mobile app development, the project covers engineering principles (K3). It uses Google Maps API and Jetpack Compose to integrate multiple design and interaction principles (K4).

2.	**EP2: Range of Conflicting Requirements**	Yes	CO2, and CO7	tackling issues like incorporating various features—including AI-driven reviews, real-time apparel ordering, and user notifications—while preserving usability, security, scalability, and regulatory compliance. This calls for a strong grasp of mathematics (K2), engineering practice (K6), and engineering design (K5) in order to manage complicated systems.
3.	**EP3: Depth of analysis required**	Yes	CO2, and CO6	choosing the right frameworks and technologies to maximize user experience, like online order confirmation. This includes understanding (K7), the foundations of engineering (K3), and specialized expertise (K4) in backend and mobile app development.
4.	**EP4: Familiarity of Issues**	Yes	CO8	using knowledge from logistics and transportation systems to optimize the platform for improved data security and user experience. This calls for a thorough comprehension of engineering practice (K6) and research literature (K8).
5.	**EP5: Extends of application codes**	No	CO5	The project's main goal is to integrate pre-existing libraries and APIs rather than writing a lot of original application code. This restricts how much custom code can be used in the project.
6.	**EP6: Extends of stakeholders involved and conflicting requirements**	Yes	CO8	Staff members are among the many stakeholders in the project, and each has distinct priorities that must be successfully balanced. This calls for engineering practice (K6), engineering design (K5), and comprehension (K7)..

7.	**EP7: Interdependence**	Yes	CO5	resolving high-level issues at all phases, guaranteeing database implementation performance, security, and data integrity, and improving user experience through iterative development cycles and feedback. This calls for understanding (K7), engineering design (K5), and engineering principles (K3).

5.4.2 Engineering Activities

To address the Course Outcomes (CO) and guarantee the project's success, a number of complicated engineering activities (EA) were carried out during the Tailor Mama project's development. These tasks required both engineering knowledge and innovative problem-solving abilities because they included technical and transdisciplinary elements. Every task was in line with the system's particular requirements and directly addressed the engineering difficulties that arose during the course of the project.

The complex engineering activities (EA) completed are shown in Table 5.4.2 below, with an emphasis on how each activity addressed the course outcomes (CO):

Table 5.4.2: Mapping of Engineering Activities

SN	EA Definition	Attainment	CO		Justification
1.	**EA1: Range of resources**	Yes	CO11		efficiently utilizing one's own abilities, available funds, and tools such as Kotlin, Android Studio, Firebase to carry out projects.
2.	**EA2: Level of interaction**	No			Interaction with different stakeholders, such as administrators, drivers, employees, and students, guarantees thorough requirements collection and incorporation of user feedback.

3.	**EA3: Innovation**	No			incorporating cutting-edge features that are uncommon in current online apparel apps, like AI-driven driver reviews and occupancy status updates.
4.	**EA4: Consequences for society and the environment**	Yes			putting a focus on sustainability and social impact by enhancing the effectiveness of transportation, encouraging environmentally friendly modes of transportation, and guaranteeing moral issues such data confidentiality and privacy.
5.	**EA-5: Familiarity**	Yes			Analyzing market rivals to draw attention to Tailor Mama's distinctive qualities and guide strategic choices for improved value proposition and competitiveness.

5.5 Summary

We covered the whole environment setup needed for Tailor Mama's development and implementation in this chapter. Functional, performance, and usability testing were all part of the thorough testing procedure, which made sure the platform fulfilled all requirements. The system was scalable for future expansion and could manage modest traffic, according to the performance findings. Furthermore, the comparison investigation revealed that Tailor Mama performs better than rivals in a number of crucial areas, such as payment convenience and customization. This chapter emphasizes how crucial thorough testing and assessment are to producing a high-caliber product that satisfies consumer and commercial demands. The platform's functionality and competitiveness will be further improved in the future based on user input and testing insights.

CHAPTER
CONCLUSION

6.1 Summary

Through the case of the Tailor Mama business model, one can prove the efficacy of a business proposition in the form of an online tailoring selling both retail clothing items and made to order custom made apparel. As a response to the constrains of conventional fashion alteration, Tailor Mama offers a customizable online platform that is convenient and easy to use for customers who want bespoke wear. The self-controlling aspects that include modern architectures of the platform, highly secure back end and ease to use front end, and a responsive design make the entire shopping and tailoring encounter excellent. Convenience and Accessibility: With Tailor Mama, customers are able to navigate through catalogs, make measurements requests, order products, and have products delivered to them from the comfort of home. This kills the Cycle of having to visit actual tailor shops physically and makes availability of the service easier to people in rural and hard to reach areas. This is because the platform creates an online market for the tailors to access a large market. This increases their exposure, increases their revenues, and allows them to expand their firms without increased capital expenditure on infrastructure. However, unlike competitors, at Tailor Mama, customers can simultaneously buy off-the-rack clothing or unique items made to the user's measurements. This flexibility has made the organization to satisfy the customer needs and choice in equal measure. The easy to fill up measurement submission form, tracking of order in real time and an efficient mode of payment makes the overall experience with the site to be efficient and effective. Abilities such as usage of Node.js in development, MongoDB as the data base, and creation of a website with responsive design guarantees scalability, increased performance, and ease of modifying the tool in future. Nevertheless, the identified project had some problems such as how to guarantee that measurement submittals were correct and how to keep the structure as simple as possible, but as full-featured as necessary. To overcome these challenges, constant testing, feedback from users and enhancement of the platform were conducted. In conclusion, Tailor Mama seeks to mitigate major challenges in the existing Tailor Mama effectively fills the gaps of the tailoring and retail clothing industry in Bangladesh through sustainability and scalability. They propose the platform opening for the further development and addition into the list of the online tailoring field

6.2 Limitation

While the project achieved its primary objectives, certain limitations were identified during development and testing:

Even when receiving guided instructions and visual illustrations, some users may be unable to correctly measure our bodies accurately thus some clothes may not fit properly. The first version of the platform has a restricted clothing item and customization services, which does not meet all the needs of the customers. Although the platform offers delivery across the Country, some areas may take a long time to

arrive if at all they will due to some hard-to-reach places. The current version lacks some of the features such as Virtual try-ons and other product recommendation system which are now considered basic in most e-commerce sites.

6.3 Future Work

There is much more that Tailor Mama can accomplish in the capacity of growth and competition. Based on feedback and industry trends, the following areas for future development are identified. Nowadays, the phenomenon of integrating advanced technologies into organizations, firms, companies, or into the economy as a whole, has become widespread. Make changes in the application so that the users can see what that particular garment looks like on them before making an order. This trickle-down benefit feature can be very useful in improving user confidence and minimizing returns. AR can also help a user make a measurement by providing instructions on the screen of the device's camera. To cater for the demands of spotlighted individuals, incorporate use of artificial intelligence that will predict customer behavior and their past purchase records to recommend clothes for them to purchase. Search in the online databases and machine learning to suggest products that will be more interesting to the customers or to make the results of the search more efficient. Add some other categories including sportswear, maternity clothes, and business formal wears. Designing special festival and cultural events edition for clothes. Let users choose designs, colors and type and fabric of the garments so that you can provide more variety. Sourcing materials from fabric manufacturers, make it possible for the users to choose materials to suit f communism individual tailoring needs. Engage local courier companies' quicker delivery and expanding on the reach thus serving the areas that are not well reached. It suggests implementing the option for same-day or next-day delivery to urban areas so that clients would be satisfied. Some of the measures for platform efficiency improvements concern sustainability, including using electric cars for delivery and avoiding excessive packaging. It will be needed to make the mobile application with intelligent measurement slides, where it will be possible to use the smartphone's camera to scan the body size. Provide video classes with live support for customers to help users measure products easily. Designate new AI based validation tools that check articles submitted for measurements and recognize possible mistakes before alterations. Expand service offering to the global arena, to the Bangladesh expatriate community members/immigrants i.e., customers interested in bespoke services. Accept multiple currency transactions and include overseas delivery methods. To reach out to customer from different regions and international linguistic background there should be a provision to support regional and international languages. Introduce a point system by which people gain points as they sweep, purchase products, refer friends, or times they write a review. It is for this reason that the points can be used to gain a discount or even totally free services. Create quizzes, polls, and style guides that will help entertain the readers and also reach out to teach them something new about fashion and tailoring. Promote modernization of measures for protecting sensitive data with demonstrating compliance to the current cybersecurity standards for keeping data safe. Introduce methods based on artificial intelligence to decrease the number of frauds detected

during the transactions and to enhance consumer accounts security. Collaborate with other fashion designers in order to bring in unique products and special collections. Conduct awareness creation or fashion training for the individual tailors for quality work and the new shift to digital working systems. The process of development of Tailor Mama aims at transforming the company into one of the most popular online portals dealing with tailoring and customers' individual clothing in Bangladesh and other countries. By continuously innovating and focusing on customer satisfaction, the platform aims to Changes the whole tailoring industry due to smart technologies and data analysis. Support responsible consumption and production of clothing materials in the fight against excessive textile waste cross the world. Uplift the individuals and companies within the local community especially with tools and chances in today's upcoming digital environment.

Reference:

[1] Chaffey, D., & Ellis-Chadwick, F. (2019). Digital Marketing: Strategy, Implementation, and Practice. Pearson Education.

[2] Laudon, K. C., & Traver, C. G. (2020). E-Commerce 2020: Business, Technology, and Society. Pearson.

[3] Nielsen, J., & Norman, D. (2013). The Design of Everyday Things. MIT Press.

[4] Choi, K., & Park, J. (2019). "The Adoption of Mobile Payment Services in the Retail Industry." Journal of Retailing and Consumer Services, 50, 42–49.

[5] Ehsan, N., Mirza, E., & Ahmad, M. (2021). "A Comparative Study on Online Tailoring Systems and Customer Satisfaction in South Asia." International Journal of Technology Trends, 17(4), 122–130.

[6] Wirtz, J., & Zeithaml, V. A. (2018). Services Marketing: People, Technology, Strategy. World Scientific.

[7] Behance. (n.d.). "Online Tailoring UX/UI Design." Retrieved from https://www.behance.net.

[8] Kumar, S., & Sharma, A. (2020). "Trends in E-Commerce and Digital Payment Methods in Emerging Markets." Journal of Business Research, 108, 265–272.

[9] W3Schools. (n.d.). "Responsive Web Design Tutorial." Retrieved from https://www.w3schools.com.

[10] Statista. (2023). "E-Commerce Market Growth in Bangladesh." Retrieved from https://www.statista.com.

[11] Islam, T., & Rahman, M. (2021). "Challenges and Opportunities for Online Tailoring Businesses in Bangladesh." Asian Business Review, 11(3), 78–85.

[12] ISO. (2022). ISO 9126-1: Software Engineering - Product Quality Model. International Organization for Standardization.

[13] Stack Overflow. (n.d.). "Best Practices for Secure Payment Gateway Integration." Retrieved from https://stackoverflow.com.

[14] GitHub. (n.d.). "Tailoring Platform Source Code Examples." Retrieved from https://github.com.

[15] P. Taylor, "The Role of Cloud Hosting in E-commerce," Journal of Internet Technology Research, vol. 6, no. 3, pp. 56–67, 2019.

[16] A. Rahman and F. Khatun, "Digital Tailoring in Bangladesh: Challenges and Opportunities," Bangladesh Journal of Digital Commerce, vol. 5, no. 1, pp. 88–96, 2020.

[17] H. Lopez, "UX Design Principles for Interactive Platforms," International Journal of Computer Science and Design Research, vol. 10, no. 3, pp. 45–53, 2019.

[18] J. Singh and A. Patel, "Energy-Efficient Practices in Cloud Hosting," IEEE Transactions on Green Computing, vol. 7, no. 4, pp. 345–351, Dec. 2020.

[19] N. Kumar, "Trends in Custom Clothing E-commerce Platforms," Journal of Modern Business Technology, vol. 19, no. 2, pp. 112–121, 2021.

[20] A. Smith and J. Brown, "Building Scalable and Secure E-commerce Applications," Proceedings of the IEEE International Conference on E-commerce Technologies (ICET), 2020, pp. 234–241.

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