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# **AR Shopping**

Smart shopping Application

## **Emerging Technology**

**Higher National Diploma in Software Engineering 24.2F**



**School of Computing and Engineering  
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# **1. Introduction**

## **1.1 Problem Statement**

Nowadays, the most popular way for people to purchase products is online. Because it's easier and convenient compared to going to different places. People can order them from home, at work or even while traveling. They don't have to go through trouble of standing in line or interacting with people in busy stores or carrying heavy bags. And anything can be bought which is not accessible locally.

Although, online purchasing does have some disadvantages that cannot be ignored. The fact that buyers cannot touch or feel the products beforehand is one of the main issues. Especially when it comes to clothes, footwear or accessories. For example, many base their online clothing selections on the image, but the material or color and size might differ when it's delivered.

Most platforms on the internet provide recommendations using algorithms, but some are not reliable most of the time. Customers are not shown products that fit their wants most of the time, which may result in less pleasurable experiences. Which may lower engagement and trust.

Another crucial issue is security. Online payments are quick and simple, but they can also be risky sometimes. Because of continuous prevalence of fraud, identity theft and scams buyers are reluctant to share their bank card details online. Additionally, it is challenging to access shopping platforms with poor internet services.

In conclusion, even though e-shopping is common, there are still number of drawbacks. Customers are nevertheless impacted by concerns including bad product recommendations, security threats, account protections and trouble accessing the internet. In the future, these issues must be resolved if internet shopping is to completely satisfy everyone.

## 1.2 Proposed Solution

We suggest **AR Shopping**, a revolutionary online shopping software which combines a number of upcoming and advanced technologies to make online buying safer, simpler, and much more pleasurable for users. In contrast to conventional e-commerce platforms, AR Shopping aims to address the current issues customers encounter, like the inability to test things before buying, improper customization, and lack of safety. This app makes shopping easier and more interesting by combining several modern technologies. Here is a quick overview of its advanced features.

- **Augmented Reality (AR) powered Try On**  
Not being able to try or check products before purchasing them is one of the main reasons for internet shopping. And as a solution AR technology allows customers to digitally try these products before purchasing. For instance, a customer can use the camera feature to check how sunglasses might look on them. Which results in fewer returns.
- **Artificial Intelligence (AI) embedded platform**  
AI can make a huge impact when it comes to personalizing products experience. The app can analyze customer browser history and patterns, their preferences and previous purchases records using AI. This helps to keep customers more engaged compared to random product recommendations.
- **Blockchain for Security**  
Online payment security is a big worry. Advanced security is provided by blockchain technology. Every transaction is stored in a secure system that protects against fraud. Because their payment information is secure and difficult to be hacked.
- **Edge Computing & 5G for smooth and fast experience**  
For every online application, performance must be quick and seamless. AR Shopping can provide smooth browsing, fast loading times, and very low lag real-time AR product viewing with 5G and edge computing. 5G guarantees that consumers may buy without interruption, even in places where internet speed was previously an issue.

- Voice AI & Natural Language Processing (NLP) for easy accessibility  
NLP and voice AI-powered voice commands are supported by the app for enhanced convenience. Customers may now shop hands-free by talking to the app. The software will immediately display the appropriate items when a user asks for something.
- Cloud Computing for efficient data storage  
All client data and app services are securely stored and expandable to meet demand thanks to cloud computing. Customers can access their accounts, saved products, and purchasing history at any time, from any device, without losing any data.
- Data Analysis for finding hidden trends  
The application uses data to look at trends and patterns in shopping. Which helps companies understand customer preferences, what is on demand and popular products. Customers benefit from offers and discounts that are customized to their interests.
- Secure Authentication for a safer shopping environment  
Another top concern is account security. AR shopping used advanced techniques like different authentications. This helps to protect financial and personal data from hackers.
- AI Chatbot to make the 24/7 customer service possible  
Finally, the app has an AI chatbot which can offer instant customer service. Can help user with any product questions or payment support to order tracking. Which makes buying experience easier and less stressful.

### 1.3 Objective of Proposed Solution

The primary goal of the suggested solution is to increase customer satisfaction, ease of use, and dependability when they shop online. Many consumers currently deal with issues including inadequate product recommendations that don't align with their interests, weak security in payments and accounts, and the inability to engage with things before making a purchase. Our approach, which prioritizes ease, security, and customization, immediately tackles these issues.

The solution is intended to:

- Allow consumers to virtually test things before making a purchase  
Customers can digitally try on things or observe them in their natural surroundings by using Augmented Reality (AR). Before making a purchase, customers can, for instance, examine how items fit their style, or how clothing fits.
- Offer individual suggestions that are based on user choices  
AI will analyze user preferences, check browsing patterns, and previous purchases to make more accurate product recommendations. This makes shopping easier and saves time.
- Offer reliable and safe payment options  
Online transactions will be safer and more transparent with the help of blockchain technology and other safe technologies. Knowing that their financial information is shielded from fraud and abuse will give them peace of mind.
- Guarantee system is quick and usable even in places with poor connectivity  
By using 5G and edge computing, the app will give smooth performance and faster loading times, allowing customers to get a pleasant shopping experience even in locations with slower internet connections.
- Improve next-generation authentication and account security  
Features such as multi-factor authentication will make user accounts more secure and reduce the likelihood of illegal access.



- Give assistance using AI chatbots

Smart chatbots will be giving instant responds to inquiries, fix problems, and help clients during their purchasing process. This guarantees that assistance is always accessible right away.

## **1.4 Chapter Summary**

In this discussion, we looked at the quick rise of online shopping and its typical drawbacks, like the inability to physically interact with things, poor personalization, security threats, and restricted accessibility in some areas. In order to address these problems, we have put forth AR Shopping, a progressive e-commerce solution that leverages potent new technologies such as voice assistance, cloud computing, blockchain, 5G, augmented reality, artificial intelligence, chatbots with AI, and advanced techniques.

In addition, addressing these drawbacks of already existing shopping platforms, this new solution aims to give a better, safer user experience, more interesting and easier to use. By combing these technologies, AR Shopping promises improved security and secure payment procedures and stronger personalized product recommendations. This method assures that online purchasing can become more reliable, and accessible for customers everywhere.

## 2. Technology Stack

### 2.1 Frontend and Backend

The platform “AR-Shopping” is a mobile application developed for E-Shopping, which supports both android and IOS users. In order to develop a system which suits for both operating systems, we used the following technology stack.

As the primary IDE for developing, **Visual studio Code** was selected since it provides following extra benefits.

- It allows to add a vast number of extensions which is required when implementing the system.
- VS code is a platform which supports to run different kind of programs such as frontend development, backend development and machine learning in a single location.

Other than the primary IDE, **Android studio** and **Xcode** are also planned to be used for testing the developed mobile application. Those are used to test the android version and iOS version of the application respectively.

When Considering the **Frontend development**, **Flutter** framework is the planned to be used because,

- It supports for both Android and iOS, which also reduces the total development kit by a considerable percentage.
- Flutter is a best option for smooth UI features required when significant functions such as AR try on interface.
- The framework is rich in modern design UI components which will increase the quality of the developed application.

As the **Backend** technology, **Node.js ( NestJS )and GraphQL API** are used since Node.js establishes a scalable solution which handles large load times simultaneously by reducing the load times. And, NestJS which is an extended version of Nodejs is used

because it facilitates MCP architecture for structural implementation. It also provides the easy access to significant features such as Secure Authentication management and easy integration with required APIs. Connecting with AI integrated algorithms, blockchain code blocks and other separate features can be implemented separately and connected to one platform can be done as a benefit gained by microservice architecture enabled by NestJs.

Collectively these technologies help us to implement a powerful mobile application along with the Emerging technologies for giving the customers a better experience and for better analysis for other users.

## **2.2 Emerging Technologies Used**

Emerging technology is meant to be the newly innovated technology solutions which will meet the needs of all cooperate environments and the entire world's community by addressing their requirements with a huge impact. Most of the time these technology-driven solutions transform a whole society into a smart environment where accessibility and satisfaction are one step away from them.

### **2.2.1 Augmented Reality (AR)**

“Augmented Reality (AR)” is a technology where it embeds and overlays the computer-created elements with the real elements to provide the users with an enhanced experience. These computer-created elements can be images, videos, audios or a visual. Unlike Virtual Reality (VR), AR does to enter the users to into a fully digital environment. It created a combination of digitality and reality. VR basically recreates the environment a fully digital space according to what it has engineered and fed with. AR can be embedded to devices which has access for camera permissions such as mobile phones, IoT devices and tablets. AR is widely used in fields such as education, health, gaming, entertainment, and marketing even.

Usage in Our Device :

AR is embedded in the Try-On screen of certain products where it allows the users to get a virtual view of how it fits, before they purchase. This mechanism is highly affecting in terms of customer satisfaction and reduction return rates.

### **2.2.2 Artificial Intelligence (AI)**

“Artificial intelligence (AI)” is the most discussed, rising emerging technology nowadays. Core objective of implementing AI is the ability to train the machine in way how human brain is used to think of. As a result, they mainly focus on areas such as problem-solving,

critical thinking and decision-making. AI is the outcome of algorithms and concepts such as deep learning, machine learning, neural networks, natural language processing etc... Outputs of AI powered system or a tool depends on the accuracy and the number of inputs it fed with. These inputs are subjected to analysis, processing and training based on the requirements. AI tools can be used to recognize hidden patterns, future predictions and for any of the field for better outcomes. As the examples for most commonly used AI tools ChatGPT, DeepSeek, Black-box AI, Copilot can be shown.

Usage in Our Device :

Our app continuously monitors the user behaviours and gets them as inputs. Those behaviours can be searching queries, interests, sizes, colours, categories etc... then the app adds the user to the relevant cluster for giving high end experience by technologies such as adding top picks and suggesting choices.

An AI chatbot is also integrated in customer care interface as well.

### **2.2.3 Blockchain**

“Blockchain” is an emerging technology which ensures the security of records passed inside it. Those data have special characteristics such as transparency and visibility. Also, records in a blockchain remains verifiable. The records are maintained as an interconnected network, where no centralized unit to control it. Additionally, update process of a single record even includes the presence of all the connected nodes. It is simply a collaborative environment conducted digitally for verified outcomes.

Usage in Our Device :

Our app uses blockchain for user authentication, payment handling, and tracking order status functions for ensure the transparency, security, and trustworthiness from sign-in to order delivery.

#### **2.2.4 5G network**

“5G” stands for the advanced, latest fifth generation of mobile connectivity network. It states that its data transmission speed can work up to 20 Gbps, and its loading latency has been reduced up to one millisecond. Compared to 4G networks, it provides a high-level experience to the users.

Usage in Our Device :

Since the AR embedded try-on screen requires a constant internet connection without latency for smoother operation and high customer satisfaction, the system supports 5G networks. It also helps when real-time data transmission such as order location tracking and AI chatbot conversations as well.

#### **2.2.5 NLP and Voice AI**

“Natural language processing (NLP)” is a significant branch of AI which functions along with human languages. It works on understanding, communicating, generating and learning from human languages. This includes both text and speech recognition which has made a huge impact on current digital environments. NLP learns from human language inputs, and it trained and modelled using machine learning algorithms. The revolutionary human understandable models have been created a human friendly digital environment to users.

Usage in Our Device :

The AI embedded Try-on screen is fed with microphone access to operate the app with user speech. It helps the user to try on the product without a physical connection with the mobile device.

### **2.2.6 Cloud computing**

This technology brings the computer related services to the users by accessing the internet. Simply the user needs to pay for a slot from a large cloud service provider, rather than owning one physically or hiring a software. Some of the main services they provide are storage and database, application services, cloud servers, networking environments etc... the main service models they provide include IaaS (Infrastructure as a service), SaaS (Software as a service) and PaaS (Platform as a service). The users also provided with different clouds such as public, private, community and hybrid to use it according to the requirements. These ensures the scalability, accessibility and cost effectiveness rather than owning one.

Usage in Our Device :

Application data are stored in a cloud and retrieved. Moreover, all the data collected from AI and ML models such as preferences, behaviours, and records are sent to the cloud as well.

### **2.2.7 Data Analysis**

Data Analysis stands for the process of discovering and exploring the patterns and trends in collected data. It involves in collecting, cleaning, transforming and processing data to generate actionable insights. This is a mechanism used by most of the businesses to gain success.

Usage in Our Device :

All the data such as revenue trends, most selling products etc... are summarized and visualized in supplier and admin interfaces. This mechanism gives an overview of the status of their business done by the application.

### **2.2.8 Secure Authentication Technologies**

Secure Authentication stands for the verification of the identity of an individual before providing the access to a specific system. It avoids the malicious and unauthorized frauds entering to the system by ensuring the protection to personal data. Emerging technologies include biometric authentication and blockchain based authentication rather than traditional ways such as username and password, social media-based login, two-factor authentication etc...

Usage in Our Device :

Our apps secure the user authentication when sign in and sign up using biometric authentication, CAPTHA and two factor authentication. Payment screen also includes these authentications to ensure the personal data security.



### **3. The Product and Design**

#### **3.1 Product Overview and features**

“AR Shopping” is a mobile Application developed for gaining a smarter shopping experience. The application is planned to implement for 03 user categories. Those users and relevant features provided by the app can be explained below.

##### **1. Customer**

- Sign-in or Sign-up to the system
- Search, view products according to the preferences
- Select a product and try-on it
- Access the try on screen using voice
- Purchase the product
- Track the order
- Getting the help of AI powered help-bot Assistance when required

##### **2. Supplier**

- Sign-in or Sign-up to the system
- Manage products (adding new, restocking, editing, deleting products)
- View Analytics and summaries of the business
- Manage customer orders
- Interactive dashboard

##### **3. Owner**

- Sign-in or Sign-up to the system
- User and management
- Interactive dashboard
- View Analytics and summaries
- Adjusting application settings

The prototype design of the product includes all User interfaces in three different pages. The Prototype was designed using **Figma**.

The Figma Link:

<https://www.figma.com/design/6a32yxbahz5yEtM0QDWGlG/AR-Shopping-Assistant-Prototype?node-id=92-831&p=f&t=WFosjtW2u6qiYAC2-0>

There are 03 common interfaces designed to all the user categories. Those are,

1. Splash Interface

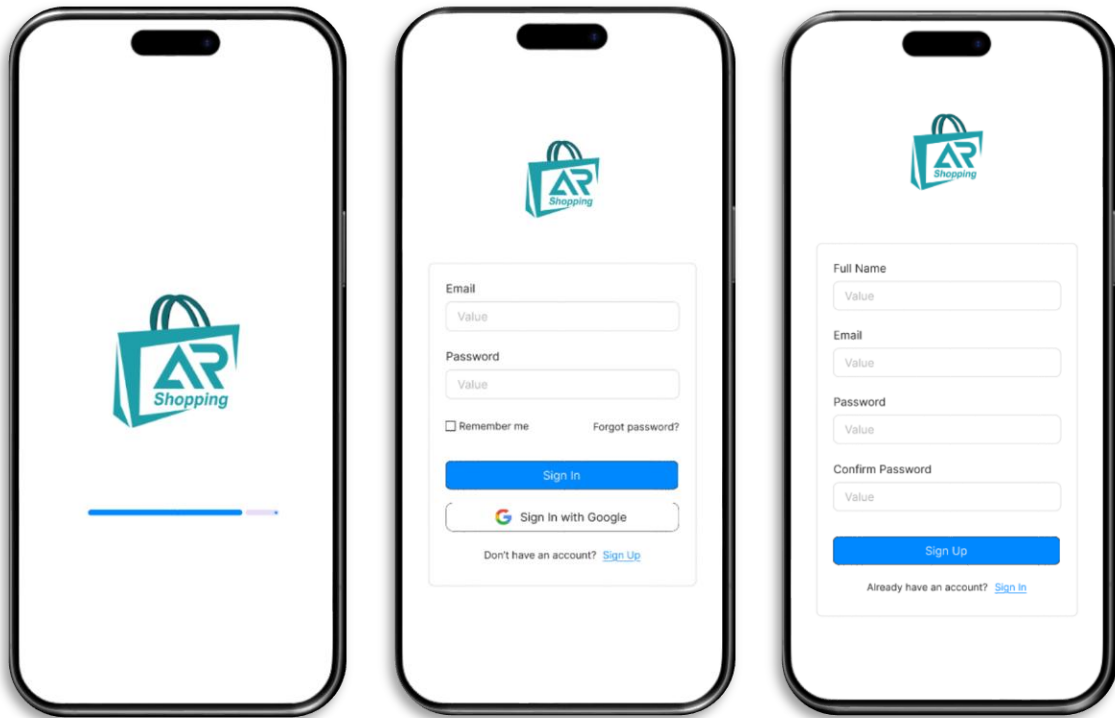
This Interface basically covers a great start-up for the application, while providing a considerable time span for backend set-up. The data in cloud are synced to the application, and the authentication setup are properly configured in between the time span set to the splash with a smooth effect.

2. Sign-In Interface

The Sign-In page also includes many emerging technologies fed with. Secure Authentication mechanisms such as Biometrics login (face, fingerprint), bot detection using CAPTCHA, google account through login, multi factor verification and suspicious login detection are planned to embed into this screen.

3. Sign-Up Interface

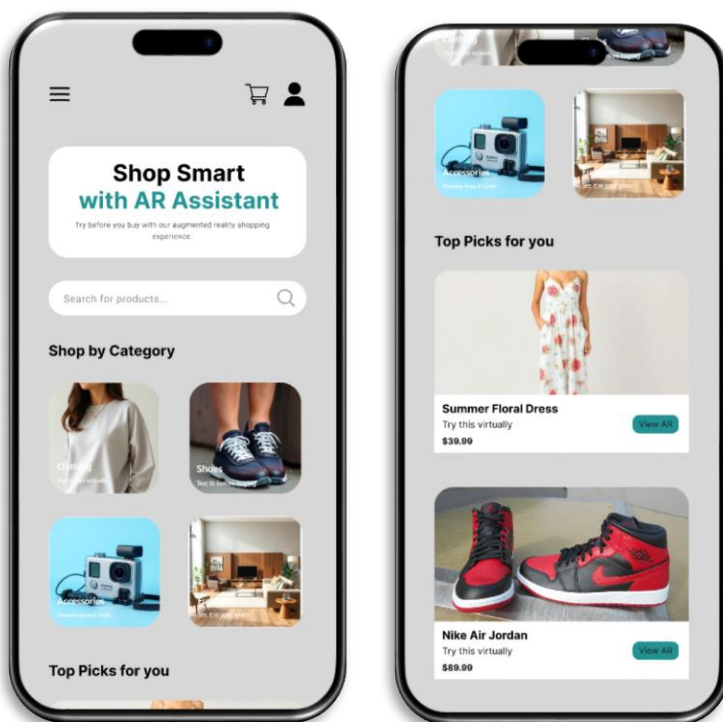
This interface also collects the biometric information apart from user information. This also fed with CAPTCHA for ensuring spam bots are blocked.



## 3.2 How System Works

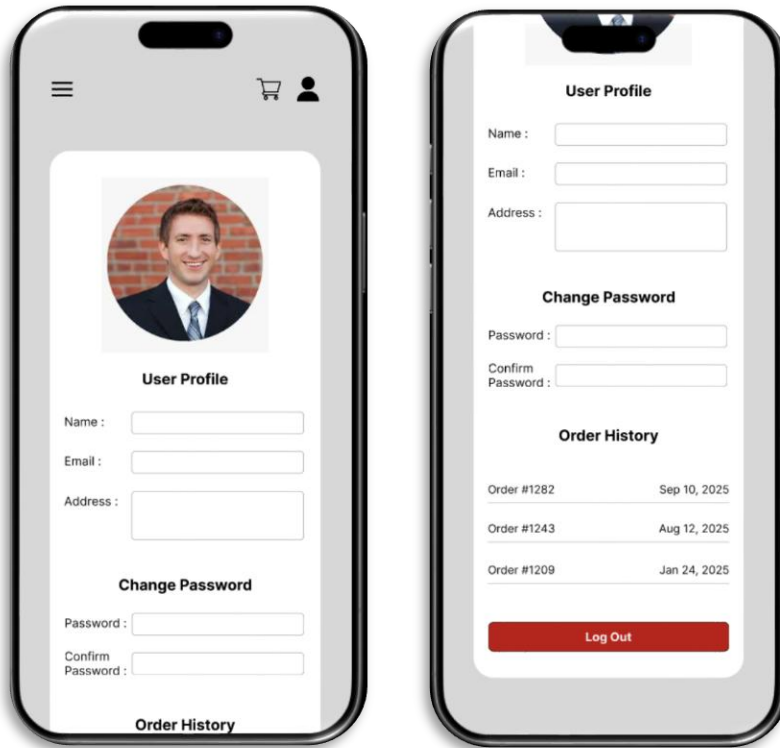
### 3.2.1 Customer Interface

#### 1. Home Interface



Home screen includes category-based shopping, which is generally placed, and the top picks section includes AI suggested products based on monitoring the user behaviour.

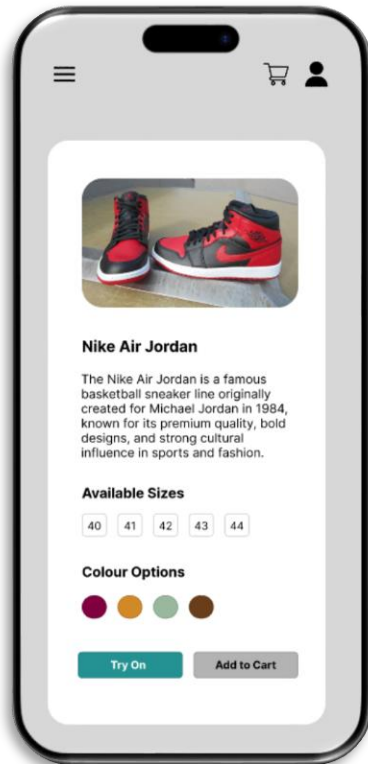
## 2. My Profile Interface



This interface allows to view and update user data along with order summary. The change password option is fed with authentication to ensure the validity which were also mentioned in the sign in screen.

Apart from that the order histories are properly arranged in a blockchain, ensuring that the data are well secured. All these data have been stored in a cloud.

### 3. Product Information Interface

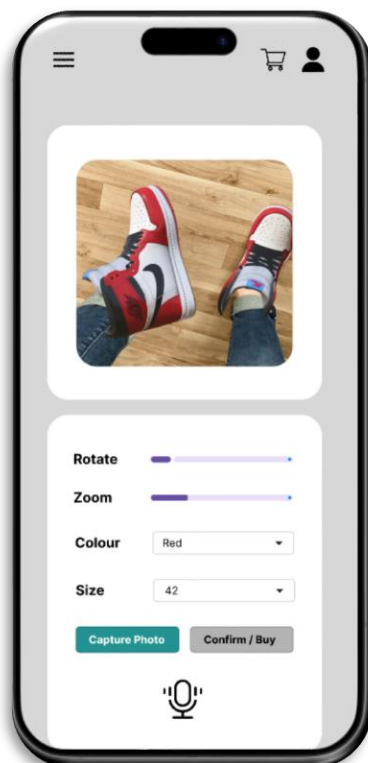


This interface includes the product description and user can navigate directly to the cart or AR based try on screen.

AI predicted similar items will be listed below based on user behaviour and category suggestions.

All the information is stored in cloud while protected using blockchain algorithms.

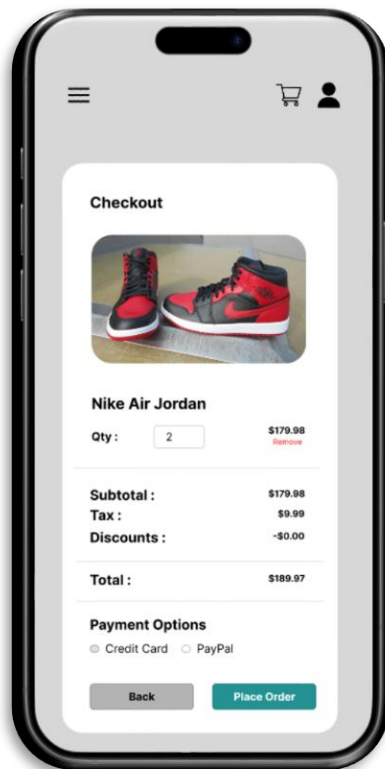
### 4. Try-On Interface



Interface helps to provide a realistic experience to users by AR integrated try on for a better customer experience. It also allows to change the settings based on customer requirements. User is also provided with a voice command operator instead of manual setting using the natural language processing (NLP) technology. Since the camera and audio access is granted, it also determines whether how user reacts to the product to ensure the customer satisfaction level and suggest and remove similar products in future using AI predictions.

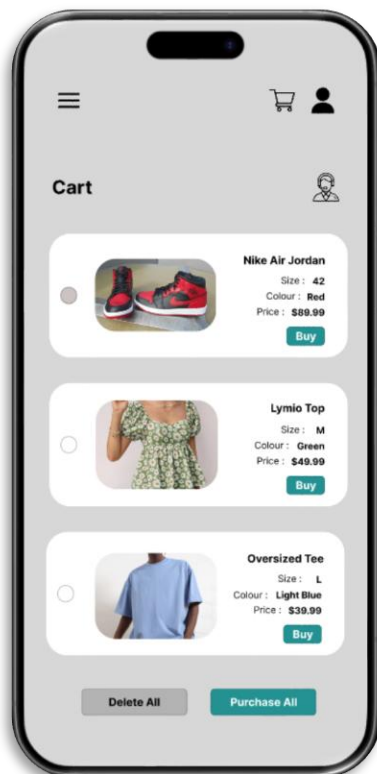
5G networks allow the smoother experience through low lag and faster internet experience.

## 5. Purchase Ready Interface



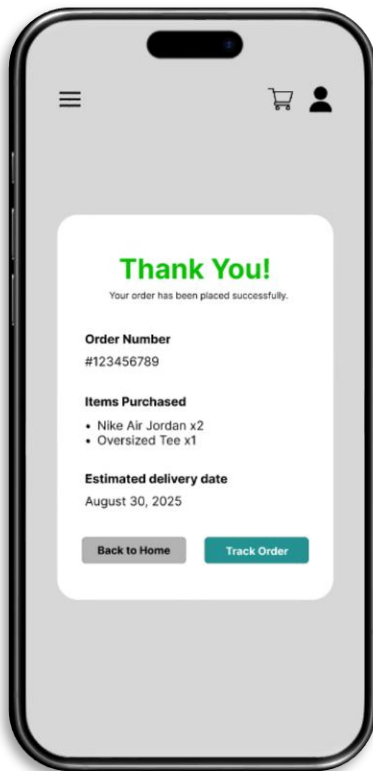
The interface shows the summary of your products you are about to purchase. The fraud detection algorithm powered by artificial intelligence ensures payment security. Payments also secure using the blockchain technology. Platform also stores all the payment data securely in a cloud.

## 6. My cart Interface



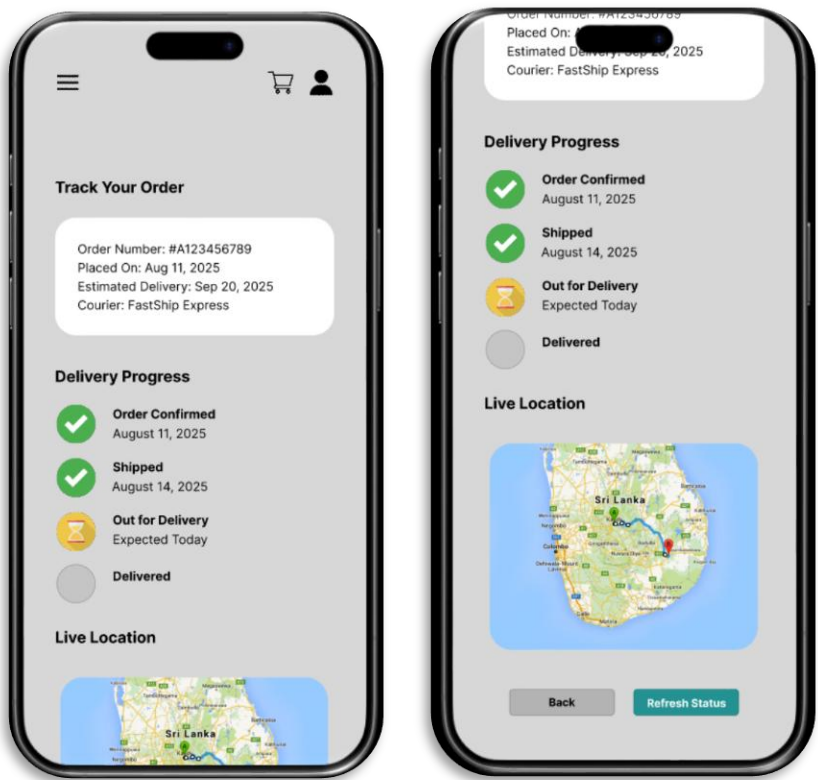
This interface allows to sync all the products that the user has saved in cart from the cloud.

## 7. Product Purchase Interface



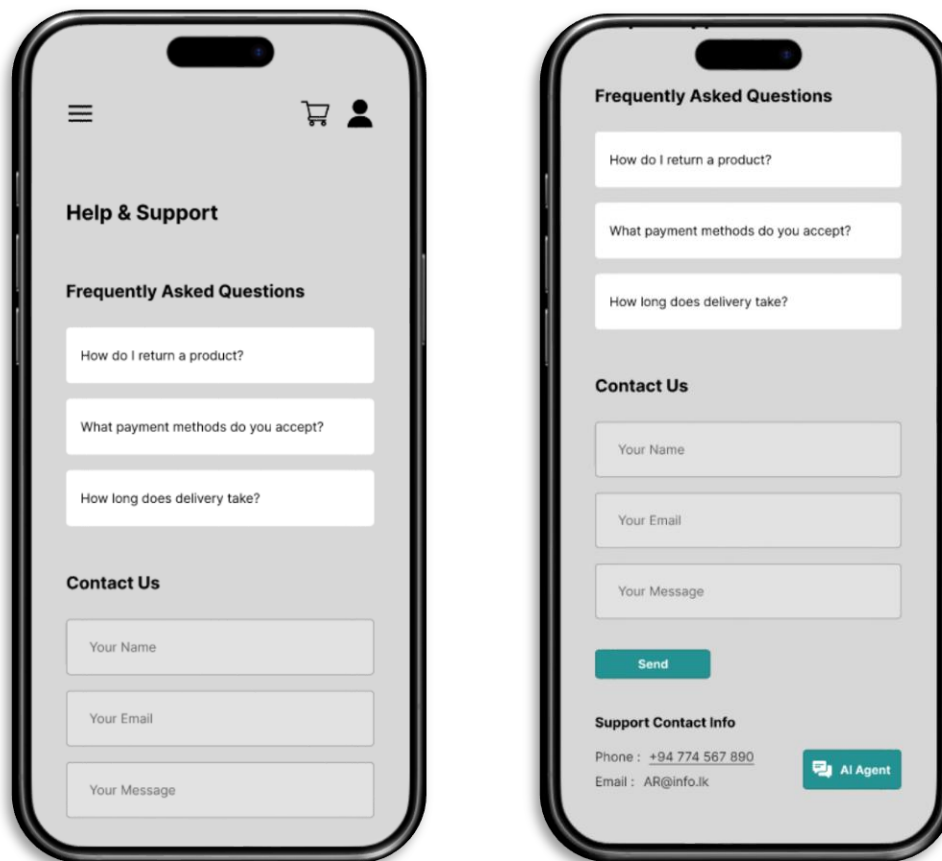
The the purchase summary is there and the interface supports go for the order tracking interface.

## 8. Order Tracking Interface



The interface allows to track the order status of the user. The emerging technologies such as AI predictive time tracking, cloud computing for realtime syncing data across different locations and mobile devices, 5g and edge for less delays, data analysis based shortest route prediction are used.

## 9. Customer Support interface

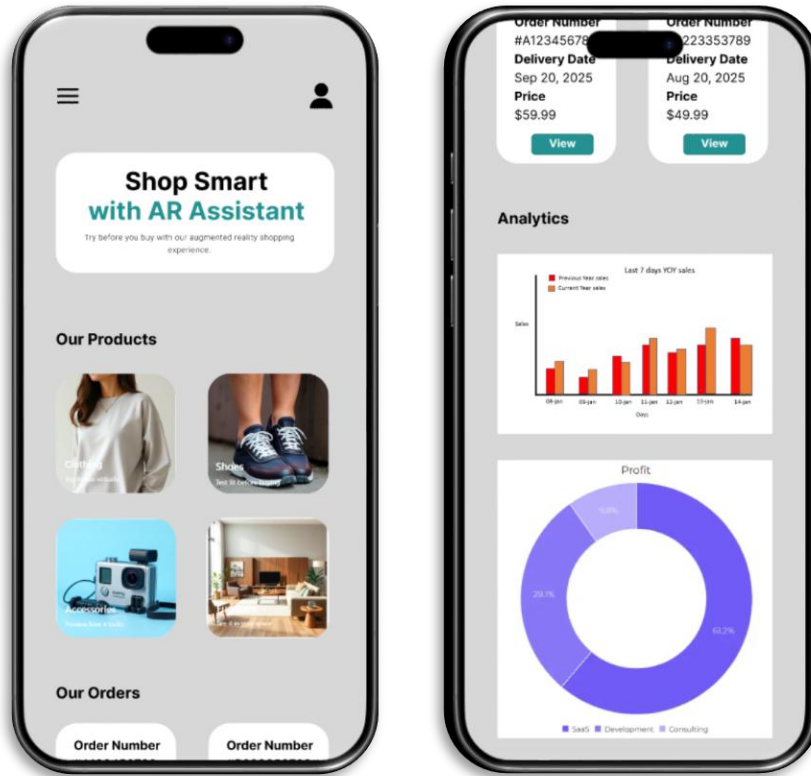


Apart from the customer care through contact us using an email, 24/7 AI agent also supports the customer anytime.



### 3.2.2 Supplier Interface

#### 1. Dashboard Interface



Apart from the customer home interface, recent order details also visible here. The analytics based on supplier's business details are also listed to give a brief description of how the trend variates. Data are synced from cloud to view and the visuals are created by analysing the data. The supplier gets the overview idea of factors such as shortages, what products does the user prefer more and revenue summaries through this. It will also predict the user preferences using AI algorithms.

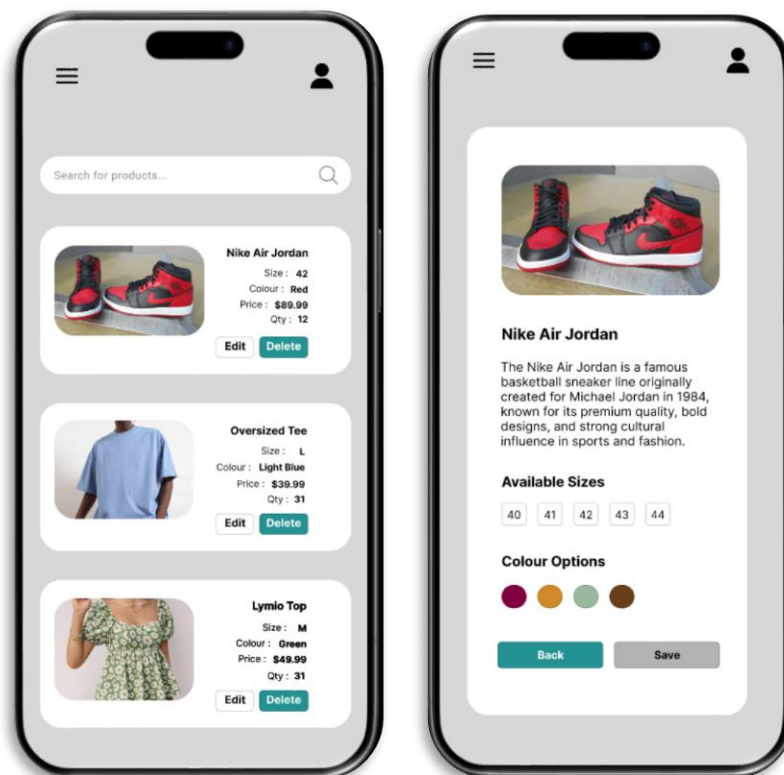
## 2. Supplier Profile Interface



A mobile app interface for a supplier profile. It features a circular profile picture of a woman, a hamburger menu icon, and a user icon. Below the profile picture is the title "User Profile". The form includes input fields for "Name:", "Email:", and "Address:". Below these is a "Change Password" section with "Password:" and "Confirm Password:" fields. At the bottom is a "Business Details" section.

Works as same as the usual customer profile.

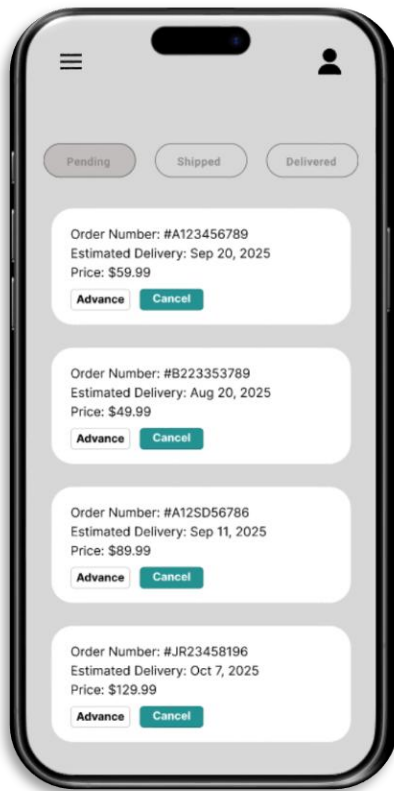
## 3. Product Management Interfaces



Two mobile app interfaces for product management. The left screen shows a list of products with a search bar at the top. The products are "Nike Air Jordan", "Oversized Tee", and "Lymio Top". Each product card displays an image, name, size, color, price, quantity, and "Edit" and "Delete" buttons. The right screen shows a detailed view of the "Nike Air Jordan" product, including a description, "Available Sizes" (40, 41, 42, 43, 44), and "Colour Options" (four color swatches). It also has "Back" and "Save" buttons.

All the data are used to sync from cloud and block chains stands for protecting the crucial information stored about the products.

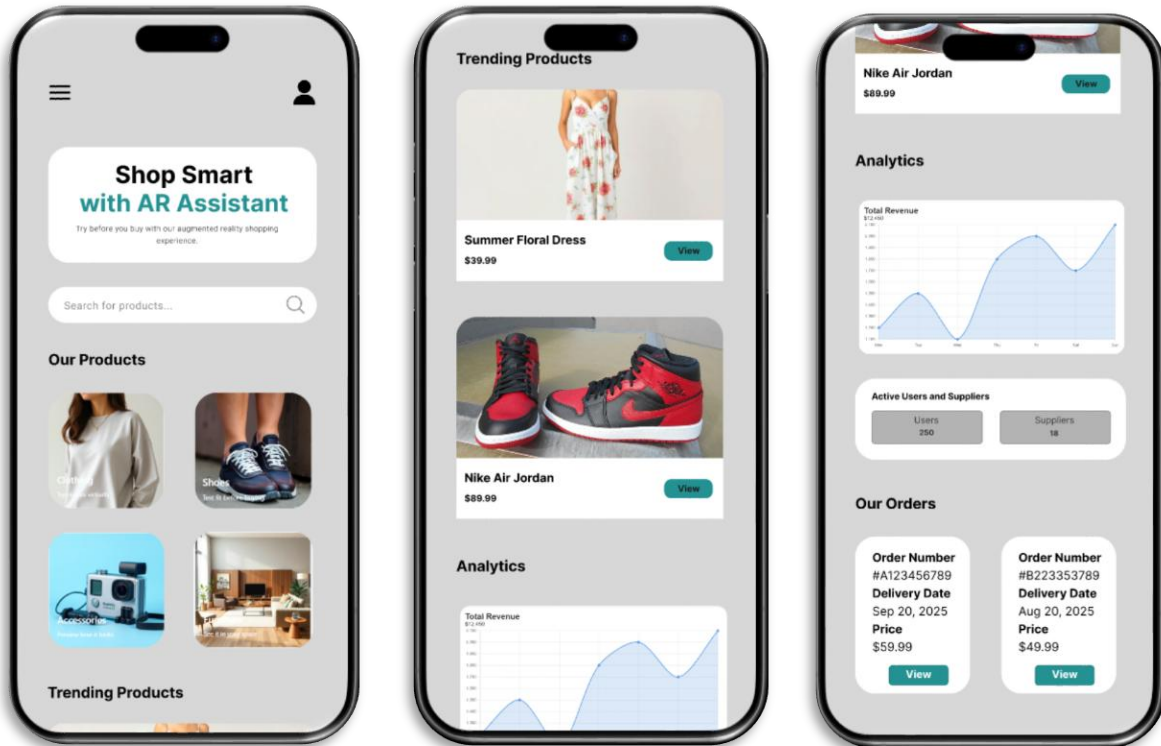
#### 4. Order Management Interfaces



AS same as the product management order management also done by syncing the data from cloud and securely handling using blockchains.

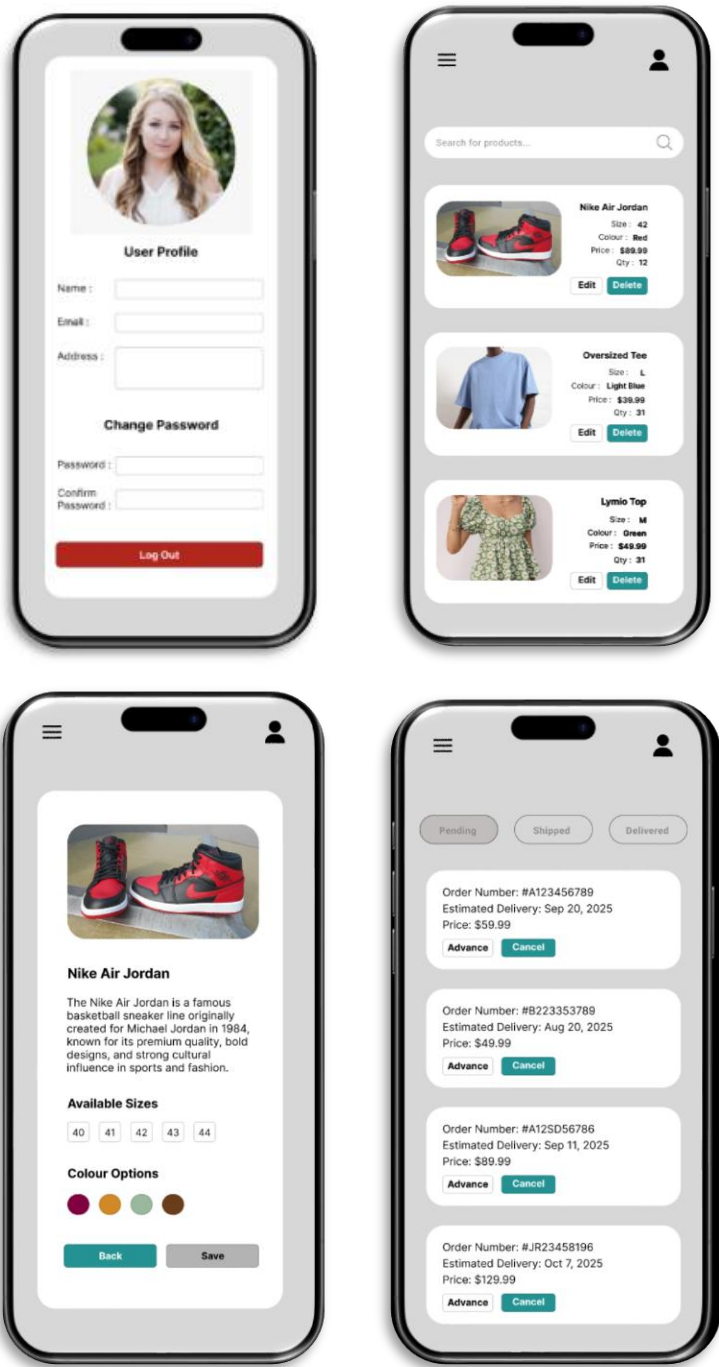
### 3.2.3 Admin Interface

#### 1. Dashboard Interface



Apart from the customer and supplier dashboard, the section trending products suggests the most preferred and engaged products used on AI algorithms. The active users are listed based on the rate of syncing realtime accurately.

2. Admin Profile Interface , Product Management Interfaces , order Management Interfaces



All works as same as supplier interface functions.

## **4. Business Plan**

### **4.1 Target Market**

The target audience for the AR shopping application consists of mostly online shopping users, who have knowledge about technology and expect more personalized, safe and engaging experience. Young aged and middle-aged buyers who use mobile devices often and internet platforms, usually between the **ages of 18 and 40**, are included in this group.

- Primary Market – University students, professionals who are working, and individuals who are interested in personalized fashion and trying out products virtually before purchasing.
- Secondary Market – Urban and semi-urban online buyers who experience issues like inaccurate product recommendations, security issues, or misfitting products.
- Areas with high and growing e-commerce usage and 4G/5G connectivity where customers expect faster and more smooth online services.

### **4.2 Revenue Model**

The revenue model for AR shopping is designed with multiple income methods such as:

- Commission from Sales – A portion of each successful product sale made using the platform will be deducted.
- Subscription Plans for Sellers – Fashion companies and vendors can sign up for premium programs that give them access to comprehensive data, powerful augmented reality features, and the ability to display more products.
- In App Advertising – To increase revenue, targeted advertisements from partner brands and shops will be shown within the app.
- Freemium Functionalities for Clients – While basic AR capabilities like product browsing and testing will be free, a premium membership can provide more personalization, and access to unique content.
- Retailer Partnerships: By licensing reality technologies and, partnerships with significant fashion and retail businesses can produce income.

### 4.3 Market Strategy

Our goal for our market strategy is to reach online consumers looking for a personalized, and safe shopping experience. The focus will be on those fashion enthusiasts, celebrities, and lifestyle gadget and tech users looking for comfort and convenience of smartphone use and AR functionalities.

- Targeted Advertisements – use social media to target users who are active in online shopping. Ads can highlight the AR try products on feature and personalized recommendations for each user.
- Collaborate with Influencer – partner with influencer for fashion and lifestyle channels to demonstrate how the app works and get more exposure.
- Referral Programs – encouraging users to invite friends by offering them rewards or discounts when the links are clicked.
- Make the app findable in Google Play and App Store with keywords, and good reviews.
- Advertise the app by release tutorials and demos showing how AR Shopping makes online shopping easy.
- Promotions & Discounts – offer discounts or special deals for the initial set of users and generate engagement.

#### 4.4 Cost Estimation

Cost Category	Description	Estimated Cost (LKR)	Type
App Development & Design	App with AR demo features & UI/UX prototype	Rs. 80,000 – 120,000	One-time (Initial)
Technology & Infrastructure	Cloud hosting, basic AI tools	Rs. 10,000 – 15,000 / month	Recurring
Human Resources	Small team / part-time freelancers	Rs. 30,000 – 50,000 / month	Recurring
Marketing & Promotion	Social media ads, posters, ambassador program	Rs. 20,000 – 40,000 (launch)	Initial + Occasional
Licensing & Legal	App store fees & basic compliance	Rs. 10,000 – 15,000 / year	Recurring (Annual)
Maintenance	Bug fixes, minor improvements	Rs. 10,000 – 20,000 / month	Recurring

#### 4.5 Timeline

Steps	Month					
	1	2	3	4	5	6
Research & Planning						
Design & Prototyping						
Development						
Testing & Feedback						
Launch & Marketing						

- Research & Planning - Market research completed
- Design & Prototyping - App wireframe and prototype ready
- Development - AR & AI features integrated along with other emerging technologies
- Testing & Feedback - Beta testing with users
- Launch & Marketing - Official app launch



## 4.6 Business Model

### Business Model Canvas for AR Shopping



The details explanation of the Business model can be shown as below.

Building Block	Details
Customer Segments	Young adults (18– 35) who shop online, University students & working professionals, Fashion consumers wanting to “try before buying”, Online retailers/brands seeking better engagement
Value Proposition	AR try-before-you-buy experience, AI-based personalized recommendations, Secure payments via blockchain- Fast, smooth app experience (5G/Edge), Voice AI for hands-free shopping, Strong account security (biometric/MFA)
Channels	Mobile app, social media campaigns, Partnerships with fashion brands & online retailers
Customer Relationships	AI Chatbot for 24/7 support, Personalized offers & loyalty rewards, Building trust through secure payments and reliable service
Revenue Streams	Commission from sales, Subscription fees for premium features, In-app advertising (sponsored products), Retailer partnerships & licensing AR

	technology
Key Resources	AR/AI app platform, Skilled team, Partnerships with fashion/retail brands, Marketing & customer support teams
Key Activities	App development, Marketing campaigns, Retailer onboarding & partnership management, User data analysis for personalization
Key Partners	Fashion & clothing retailers, Cloud providers (AWS/Azure/Google Cloud), Payment gateways / Blockchain providers, Marketing & advertising partners
Cost Structure	App development & maintenance, Cloud hosting, Salaries, Marketing & promotions, Licensing & compliance costs

## 5. Risks and Mitigations

Potential challenges and risks can be faced and those should be mitigated to ensure the smooth development, implementation and deployment of the mobile application. Some of them are listed below.

1. **Risk** - AR, AI, and blockchain require heavy investment, making it difficult for a startup.

**Mitigation** - Start with a minimum viable product using core AR features; use open-source frameworks; outsource to affordable developers.

2. **Risk** - Customers may find AR shopping complicated due to adoption momentum.

**Mitigation** - Have simple UI/UX, offering tutorials and demos for easier adoption.

3. **Risk** - managing customer data, payments, and blockchain integration can bring up trust issues.

**Mitigation** - Use secure authentication, blockchain-based verification, and keep standards.

4. **Risk** - Current e-commerce giants (Amazon, Alibaba) may introduce similar AR features.

**Mitigation** - Differentiate with niche focus, personalized AI recommendations, and local market entry before scaling.

5. **Risk** - AR requires good internet (5G/4G) and modern smartphones

**Mitigation** - Use points, AR rewards, personalized notifications, and loyalty discounts to keep users engaged

6. **Risk** - Users may download the app once but not return.

**Mitigation** - Start with a minimum viable product using core AR features; use open-source frameworks; outsource to affordable developers.

7. **Risk** - Regular updates, and server costs can grow expensive.

**Mitigation** - Use cloud-based scaling (pay as you go).

8. **Risk** - Issues around consumer protection, false advertising, or cross-border sales.

**Mitigation** - Hire a legal advisor, maintain clear product disclaimers, ensure compliance with e-commerce regulations.

## 6. Group Member Contribution

Index Number	Student Name	Contribution
COHNDSE24.2F - 026	P H N Sethulya	Report - Chapter 01, 04, 06
COHNDSE24.2F - 027	A K L B Hapugoda	Report - Chapter 04, 05, 06
COHNDSE24.2F - 041	M H F Ilma	Report - Chapter 02, 03
COHNDSE24.2F - 042	M A Azward	Prototype and Presentation slide

## **7. Conclusion**

This report took into consideration the major issues of online shopping, including not being able to test anything, bad recommendations, security issues, and poor access in some areas. To remedy that, we proposed AR Shopping, an app that utilizes AR, AI, blockchain, 5G, voice control, cloud computing, and secure verification to make shopping easier, safer, and more enjoyable.

Although the app is limited, for example by needing good internet and new devices, it does demonstrate how new technology can really make online shopping better. The future could see it developed further with better AI suggestions, broader device support, and user testing to further enhance its usage and enjoyment.

## 8. References

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