

Alcohol – Know Your Limits

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ABSTRACT-- “ALCOHOL – KNOW YOUR LIMITS” project is an innovative application designed to combat alcohol addiction and encourage responsible drinking habits. By providing distinct interfaces for users and retailers, the system establishes a secure and controlled system to regulate alcohol sales and consumption. Users are required to register with Aadhaar-based authentication, age verification (above 21), and health document submission, ensuring only eligible individuals gain access. The app generates QR codes tied to health reports for purchase validation, enabling retailers to securely verify user’s eligibility. This dual-layered approach fosters accountability and compliance with health and legal standards. Beyond its regulatory function, the platform serves as an educational platform, raising awareness about the risks of alcohol misuse and promoting sensitive data, while the intuitive user interface ensures accessibility for all demographics. Future enhancements include integration with wearable devices for real-time health monitoring, AI-powered consumption insights, and global adaption to local laws and norms. This comprehensive solution bridges technology and public health, addressing the societal challenges of alcohol addiction while paving the way for healthier communities

Keywords: *Alcohol Addiction, Responsible Consumption, Health Verification, Alcohol Consumption, Public Health.*

I. INTRODUCTION

Alcohol addiction poses significant challenges to individual health, societal well-being, and economic stability. Excessive consumption of alcohol not only impacts the physical and mental health of individuals but also contributes to social issues such as impaired relationships, workplace inefficiency, and increased healthcare costs. Addressing these concerns requires a proactive and regulated approach that encourages responsible alcohol consumption while promoting public awareness about its potential risks. “Alcohol – Know Your Limits” is an innovative initiative designed to create a safer and more accountable environment for alcohol purchase and consumption.

The platform facilitates a dual-login system for users and retailers, ensuring a collaborative effort to regulate alcohol transactions. Users are required to provide age verification and health documentation, fostering a culture of responsibility and self-awareness. On the other hand, retailers ensure compliance by verifying user credentials before completing any sales. This initiative not only aims to reduce the prevalence of alcohol misuse but also emphasizes the importance of health consciousness and accountability. By bridging the gap between technology and societal responsibility, the platform seeks to empower individuals and retailers to take informed decisions and contribute to a healthier society.

II. OBJECTIVE AND METHODOLOGY

The objective of “Alcohol – Know Your Limits” is to promote responsible alcohol consumption and reduce misuse by fostering accountability and informed decision-making. The platform aims to encourage health-conscious habits by requiring users to verify their age and health status while ensuring legal and responsible alcohol addiction and its societal impact, providing a secure platform to monitor and regulate transactions. To achieve these goals, the platform employs a structured methodology. Users register by providing personal details such as age and Aadhaar – Linked identity, verified through real-time OTP authentication. Health documentation is mandatory to ensure users are fit for alcohol consumption. A dual login system allows users and retailers to interact seamlessly; users generate QR codes linked to their health reports, while retailers validate these codes before completing sales. Additionally, the platform integrates health awareness by encouraging users to update health reports regularly. By combining these elements with secure data handling, the platform offers a user-friendly, reliable, transparent solution to mitigate alcohol misuse.

III. LITERATURE SURVEY

Alcohol addiction is a pervasive issue affecting individuals, families, and societies worldwide. According to the World Health Organisation (WHO), harmful alcohol use contributes to over 5% of the global disease burden and is linked to more than 3 million deaths annually. Prolonged alcohol abuse is associated with numerous health risks, including liver diseases, cardiovascular

problems, and mental health disorders. Beyond personal health, alcohol misuse often leads to social issues such as domestic violence, workplace inefficiency, and accidents, which place a significant burden on societal resources.

Existing interventions include government regulations, awareness campaigns, and rehabilitation programs. While these efforts have shown effectiveness, they often lack real-time technology-driven solutions, such as mobile applications, suggest that they play a pivotal role in promoting behaviour change by providing personalized and interactive tracking have proven to be effective in encouraging compliance with regulations and fostering awareness. However, a gap remains in integrating user and retailer collaboration for responsible alcohol sales.

The “ALCOHOL-KNOW YOUR LIMITS” platform bridges this gap by combining user accountability with retailer validation, offering a comprehensive platform to monitor and regulate alcohol transactions. Furthermore, academic and industry research supports the integration of health awareness components within digital solutions. Encouraging users to upload and update health documents not only promotes self-regulation but also educated them about the long-term effects of alcohol consumption. The combination of technology, health documentation, and transaction monitoring in a single platform aligns with best practices identified in recent studies and provides a scalable solution to mitigate alcohol misuse at both individual and societal le This approach aligns with findings in literature that emphasize the importance of community-driven, technology-based solutions to address public health challenges effectively.

IV. PROPOSED SYSTEM

The proposed system, “Alcohol – Know Your Limits,” is a comprehensive application that integrates user accountability and retailer verification to ensure responsible alcohol consumption and sales. The system creates a seamless interaction between users and retailers to ensure that alcohol is consumed and sold in a controlled, health-conscious, and lawful manner. By integrating health documentation, age verification, and transaction tracking, the application offers a robust solution to address the societal challenges posed by alcohol misuse. Below is a detailed explanation of the system:

A. User Registration and Authentication

The system starts with a robust registration process for users. Individuals are required to provide essential details, including their name, age, mobile number, and Aadhaar number. To comply with legal requirements, the application restricts registration to users aged 21 and above. A real-time OTP verification linked to the Aadhaar-registered mobile number is used to authenticate the user’s identity and ensure data accuracy. Once Verified, users can create a secure password to access their accounts. This step not only enhances the security of user information but also prevents unauthorized access, ensuring the credibility of the system.

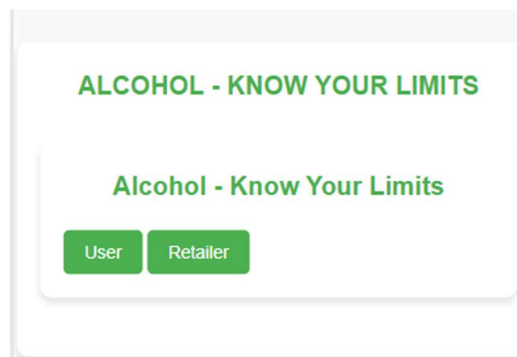


Fig. 1 User and Retailer Interface

B. Health Documentation Submission

A unique feature of the system is the mandatory submission of health documents during user registration. Users are required to upload recent medical reports to verify their fitness for alcohol consumption. These reports help ensure that individuals with health conditions that could be exacerbated by alcohol are identified and cautioned. The documents are stored securely in the user’s profile and linked to the QR code for further validation. This feature promotes health awareness and encourages users to considers their physical well-being before purchasing alcohol.

C. QR Code Generation

Upon successful registration and health verification, the system generates a unique QR code for each user. This QR code acts as a digital token that verifies the user’s eligibility to purchase alcohol. The QR code is dynamic and linked to the user’s health

documentation and profile, ensuring it reflects up-to-date information. Users can present this QR code to retailers during transactions, making the process efficient and secure.

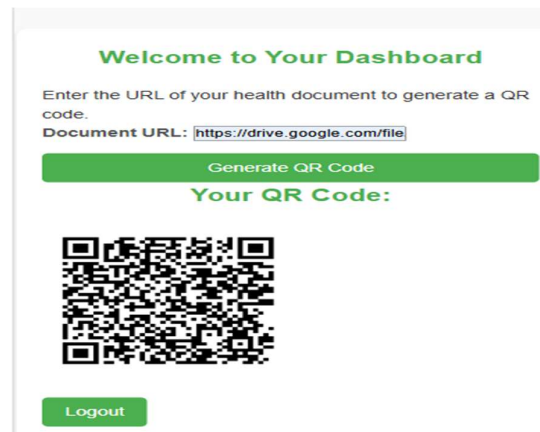


Fig.2 User Dashboard to generate QR code

D. Retailer Verification portal

Retailers play a crucial role in the system by ensuring that alcohol is sold only to eligible users. The application provides a separate portal for retailers, where they can log in and access tools to verify user QR codes. By scanning the QR code, the retailer can validate the user's age, health documentation, and overall eligibility before completing the sale. This process helps enforce compliance with health and legal standards, ensuring alcohol sales are regulated and responsible.

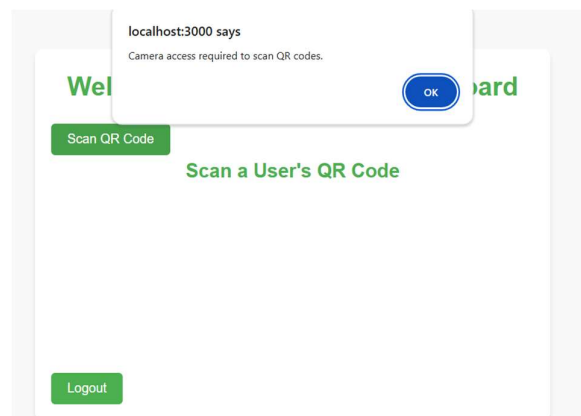


Fig.3 Retailer Dashboard to scan QR Code

E. Dual Login System

The system incorporates a dual-login mechanism, creating distinct portals for users and retailers. The user portal allows individuals to manage their profiles, upload health documents, and generate QR codes. The retailer portal focuses on verification and transaction monitoring, enabling retailers to validate QR codes and ensure compliance. This segregation of roles enhances clarity and accountability, ensuring that both parties fulfil their responsibilities effectively.

F. Health Awareness and Education

In addition to regulating transactions, the system aims to raise awareness about the risks of alcohol misuse. The application includes a health education module that provides users with information on the effects of alcohol on the body, guidelines for safe consumption, and tips for maintaining a healthy lifestyle. By integrating health awareness, the application not only encourages users to make informed decisions but also fosters a long-term culture of responsible drinking.

V. IMPLEMENTATION

The system begins with a streamlined user registration process, where personal details are verified using Aadhaar linked OTP authentication and age restrictions are enforced. Users upload health reports, which are securely stored and linked to profiles, enabling validation of fitness for alcohol consumption. A dynamic QR code is generated for each user, encoding their eligibility information and allowing seamless verifications by retailers. Retailers access a dedicated portal to scan and validate these QR codes before completing transactions, ensuring compliance with health and legal standards. All transactions are logged in a secure database, promoting transparency and accountability. The application also includes an educational module to raise awareness about responsible alcohol consumption. Robust encryption safeguards user data, while continuous testing and updates ensure smooth functionality and security. This implementation creates a scalable solution for mitigating alcohol misuse and fostering a culture of responsible drinking.

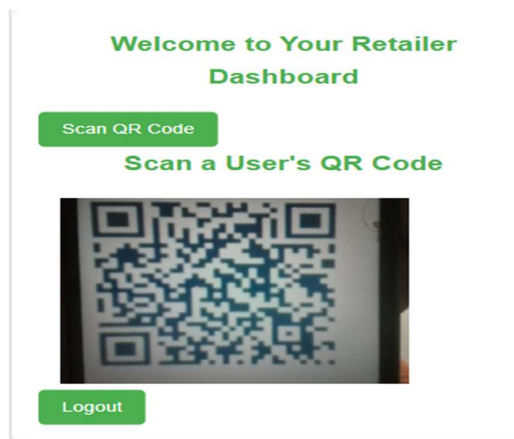


Fig. 4 Retailer Dashboard

A. Architecture diagram

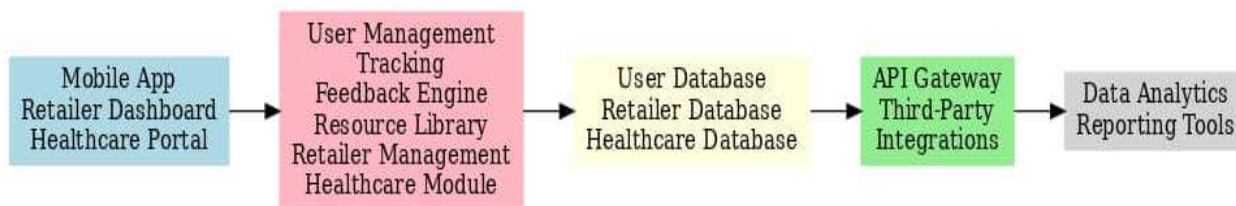


Fig.5 Architecture Diagram

The architecture diagram of the “Alcohol – Know Your Limits” application illustrates the seamless interaction between users, retailers, and the backend system. The User interface Layer facilitates user registration and login, requiring details such as name, age, Aadhaar number, and health document upload. OTP verification ensures data authenticity, while health reports are securely uploaded and linked to user profiles for QR codes generation. On the Retailer Interface Layer, Retailers validate customer eligibility by logging in and scanning QR codes generated by users, ensuring compliance with health and legal standards. At the core Backend Processing Layer, which handles critical operations like Aadhaar based OTP verification, age checks, and QR code generation. A secure database manages and stores user data, including personal details and uploaded documents, with encryption safeguarding sensitive information. The Communication Layer uses secure APIs to transfer data between the interfaces and backend, ensuring end-to-end encryption for privacy and security. Additionally, the architecture includes Regulatory and Monitoring Services, maintaining purchase logs for oversight and compliance. This integrated system ensures smooth functionality, user accountability, and adherence to public health and regulatory guidelines.

B. Test Cases:

Test Case ID	Test Scenario	Test Steps	Expected Result	Actual Result	Status
TC001	User Registration Validation	Enter invalid details	Registration fails with error	Registration failed as expected.	Passed
TC002	QR Code Generation	upload report, generate QR code.".	QRcode generated successfully	QRcode generated successfully	Passed
TC003	Purchase Restriction	Retailer tries selling within 48-hour limit.	Error: "Purchase not allowed within 48 hours."	Error "Purchase not allowed within 48 hours."	Passed
TC004	Unauthorized Access (Invalid Age)	Register account with age below 19.	Registration denied with error: "Age below 19 not eligible."	Registration denied as expected. Error: "Age below 19 not eligible."	Passed

VI. DISCUSSIONS

The development and implementation of “Alcohol – Know Your Limits” highlight several important considerations and challenges encountered during the project. These discussions provide insights into the thought process, design decisions, and improvements that shaped the application:

A. Public Health Concerns and App Necessity

Alcohol addiction and misuse pose significant public health challenges, including health deterioration, accidents, and societal disruptions that not only restricts alcohol consumption but also promotes awareness about responsible drinking. The inclusion of health-based criteria for purchasing alcohol emerged as a solution to address the root cause of alcohol-related harm. This aspect ensures that the app does more than just act as a regulatory tool --it educates users about the consequences of excessive alcohol consumption. Discussions also highlighted the importance of empowering individuals to make informed decisions through the app’s health education module. By tying alcohol purchase eligibility to health reports, the application offers a proactive approach to fostering a healthier lifestyle.

B. Data Privacy and Security

The project’s reliance on sensitive data, including Aadhaar-linked information and health records, raised critical concerns about data privacy and security. Ensuring user trust through robust encryption techniques, secure storage, and compliance with data protection laws was a priority. Discussions centered around implementing end-to-end encryption for data in transit and storage, ensuring unauthorized parties cannot access personal or transactional data. Regular vulnerability testing was proposed to maintain the system’s security integrity. To further safeguard sensitive information, the app incorporates stringent access controls, allowing only verified users and retailers to interact with specific features. The discussions also extended to ensuring the app aligns with national and international privacy regulations, like GDPR, to address legal considerations. This focus on security ensures both compliance and user trust, forming the backbone of the application.

VII. CONCLUSION AND FUTURE SCOPE

The Alcohol – Know Your Limits application provides a robust solution to address alcohol addiction by promoting responsible consumption and adhering to health and legal standards. With features like Aadhaar-based authentication, health document validation. The app emphasizes public health and user accountability, creating a scalable and impactful tool for societal benefit. In the future, the app can expand by integrating AI for personalized insights, collaborating with government policies, enhancing health monitoring through wearables, and introducing features like offline functionality and emergency alerts. With potential global scalability and partnerships with NGO’s, the app aims to become a comprehensive platform for tackling alcohol misuse and fostering healthier lifestyles.

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