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“Findify: A Hyperlocal Product Discovery System for Real-Time Availability in Offline Retail Markets”

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Abstract

In Indian cities, people are burdened with several problems when they try to find a certain rare or specific product in nearby shops. Most of the local shopkeepers are still not fully digital, and hence the customers have to visit many shops, wasting much time. Findify is an Android app built with the aim of solving this issue. Findify helps the customer find which nearby shop has the product they need. The app is basically assisted by the shopkeepers and users themselves. Shopkeepers will be able to update the availability of the product, while users can provide feedback on whether or not the product is actually available. We developed the app using Flutter for the frontend and Firebase and Firestore for the backend. Here, by the help of this system, people are able to save time and other inconveniences that arise from extra visits to stores. Our early results show that Findify can make shopping easier and also help small shops move towards digital methods. This project supports the growth of digital technology in local markets through a very simple and easy-to-use idea.

Keywords: Findify; Product Availability; Local Shops; Flutter Firebase App; Digital Marketplace

INTRODUCTION

In today's world, technology has really made online shopping a on-demanding thing. But what about when you're hunting for something specific or hard to find from a local store nearby? That's where things get pretty tricky. As in India, most small shops are still not fully online. They do not list their stock digitally. So people end up hopping from one store to another just to check whether the stores have what you need. It is a complete time-wasting and super frustrating, especially in times of urgency when it involves something urgent, like a rare medicine or any essential household item. And that is why we came up with Findify. It's an app for hyperlocal product discovery. The core idea is simple: help people figure out fast which shop around them has the exact product they are looking for. Unlike most large marketplaces online, Findify is tailored for offline retail. It bridges the gap between local shop owners and customers using a very basic digital setup. Shopkeepers can create manual updates for whether they have a product in stock, and users can add their two cents as feedback-verification. It's a mix of hands-on updating and community moderation that installs trust

and keeps everything reliable for all parties involved. We used Flutter to build the app, Firebase for the user login process, and Cloud Firestore for handling data in real-time. This makes everything smooth and up to the minute. Shops do not need fancy, full-blown inventory systems. All they do is use a quick "yes" or "no" on whether something is in stock. Kept that way, it is easy even for small retailers who are not tech-savvy. Plus, location tracking; the app shows you how far away the shop is and even gives directions, so you can get there fast. The goal here isn't just to make life easier for shoppers; it's also to give that much-needed push that these local businesses need for going digital. Closing off the communication gap between stores and customers, Findify stitches together a smarter, more connected way to shop. With this project, we are demonstrating how a simple digital tool can solve a common urban hassle and increase convenience in retail. Now, coming back to the challenges of offline retail when trying to build something like this: First, most of the small shopkeepers are not digital; they don't have an online means to share what's in stock. Which makes customers just literally fly blind-it could take hours to visit shop after shop. Secondly, keeping the product information bang up to date is another big issue. If a store says they've got something, it may well sell out shortly afterwards. Without an effective system, it's tricky to update data in real-time, and if users get disappointed several times they quit the application fast. Trust is huge too. Nobody will continue to use it if they think the information is phony. You show up there and the product is not there, that's it; they are gone. So, accuracy and verification need to be spot on.

Topping this off is location and internet issues. Not every place has great connectivity-a smaller town or a rural place doesn't have good connectivity. Many shops would not want to be bothered with an app or may not even have smartphones, further restricting the number of places we can cover. And then, of course, there is privacy: in fact, when we deal with user locations and shop details, all that information needs to be kept private. Shop owners may be apprehensive about what is done with their information. To summarize, tech phobia among shopkeepers, data getting updated, user trust, inconsistent internet, and privacy issues are the major roadblocks. These need to be dealt with if a Findify app is to be truly successful.

LITERATURE REVIEW

As of today, research has revealed that one of the most significant changes that technology has brought to retail is the way most studies focus solely on online shopping while off-line local shops are still in the dark. Numerous papers indicate that consumers frequently have difficulty locating certain items in physical stores and markets, especially in countries like India, where small shop owners hardly ever go digital.

The first pieces of research about digitization of retail show the point that small retailers are reluctant to convert to digital means of trade as they consider digital systems costly, complicated, and too technical.

Chhabra (2020) said that online platforms might have several benefits, but local vendors have a tendency to stay away from them because they are demanding in terms of training and are not user-friendly. It is for this reason that our application Findify is extremely simple - shopkeepers only need to press "yes" or "no" to indicate product availability rather than dealing with sophisticated inventory software.

There is also some research on hyperlocal delivery services like Dunzo, Zomato, and BigBasket, but these are primarily concerned with food and groceries, while the question of how to get a specific product from a nearby brick-and-mortar store remains unanswered. Customers according to Gupta (2019) spend a lot of unnecessary

time going from one store to another to search for basic products, and they don't have an easy local searching solution that also takes care of manual stock updates. Findify bridges that gap by providing store invisibility for offline stores in real-time.

In relation to technology, research work shows that Flutter and Firebase are two of the most excellent tools for the development of mobile applications. Jadaun (2021) discovered that Flutter is best suited for apps that require frequent updates and have to maintain an attractive look, whereas Saraf (2021) pointed out that Firebase is perfect for managing user authentication, data storage, and real-time syncing. These facts are in line with our decision to employ Flutter for the frontend and Firestore for the backend in Findify.

A crucial point emphasized by the research is the significance of the user's feedback system. Community feedback is accredited by numerous studies as a factor that helps in maintaining data accuracy. Reviews help buyers in online shopping, but for offline stores, no such system exists. Findify provides this service by letting users verify if a product is really there or not — thus forming a crowd-based correction mechanism like a crowdsourcing platform.

Research on India retail tech adoption carries along with it the challenges such as poor internet accessibility, low level of digital skills, and concerns related to data protection. Kumar (2020) stressed that small retailers are likely to opt for easy-to-use tools that do not interfere with their daily routine. This is in line with Findify's tactic of making things simple through the basic yes/no confirmations rather than full-fledged digital management.

In short, despite the existence of a multitude of digital instruments, none of them are devoted to solving the trick question of finding products in the local offline shops. Most of the research works are dedicated to e-commerce, logistics, or inventory systems and hence overlook the needs of walk-in customers who want to know which nearby store has what they need. This research gap is a strong argument for the existence of Findify which is a semi-digital, easy-to-use, and community-based app that brings digital benefits to traditional markets.

SYSTEM ARCHITECTURE

FINDIFY system architecture is a client-server model linked with Firebase's cloud-based infrastructure to facilitate real-time data synchronization between users and shopkeepers.

Overview

The system is composed of three major components: User Module, Shopkeeper Module Backend (Firebase + Firestore). These parts interact with each other via the internet through real-time database connections, which guarantees that changes made by shopkeepers are immediately visible to customers

- User Module (Frontend) Built with Flutter. Enables a user to register and log in. Besides, a user can look for products by name or category. Acquires data of nearest stores through Google Maps API and device GPS. Gives the product stock information ("Available" or "Out of Stock"). Gives a feedback feature to the users for the confirmation of the actual availability.

- **Shopkeeper Module:** Help interface of shops where owners can log in and manually update product availability by using easy toggles. The change in Firestore is done by the update operation, which is thus reflected immediately on the users' app. Few steps of a technical nature is the main idea behind the non-digital shopkeepers' participation who are thus motivated to take part.
- **Backend and Database:** Firebase Authentication provides the security of user and shopkeeper login. Firestore Database keeps records of products, store info, and feedback. Changes to data are available right away to all connected devices. Firebase Cloud Messaging can be the method of push notifications and updates if a user permits.
- **Location & Map Services:** Google Maps API merges the functionalities for finding a location, calculating the distance, and giving directions. Users can check out the shops on a map and obtain turn-by-turn directions.

METHODOLOGY

Our frontend choice was Flutter. A great feature of this framework is that it enables one to create a beautiful, cross-platform mobile application easily. So, we selected Flutter for the frontend.

For the backend, Firebase was a good choice. Sign in of users, a real-time database in the shape of Firestore, and mobile integration were the main things that Firebase took care of. Hence, we decided to go with Firebase for the backend.

We did various searches on the app as well as replies from shops. The places that the app showed were double-checked if they were correct and whether the feedback was changing things appropriately. We also did some hands-on work on stock and took information instantly.

Lastly, app development: we took the modular approach. On the user side, people can register, log in, and look for products via their location. The shopkeeper side has an owner who with a simple toggle can confirm or deny the availability. The search and location part are using GPS and radius filters to find the nearest shops shows on a map or list.

What about the feedback system? Users have the ability to report if something is not stocked, thus data stays clean. Following that was testing - to ensure the app wouldn't crash or return inaccurate data.

And finally, evaluation: we ended up by determining how users experienced the app and how shopkeepers handled. The app was compared with the traditional way of walking. We measured the amount of hassle that this app saves. The outcome? It turned out to be handy enough for daily use.

METHODOLOGY CONCLUSION

The development of Findify aimed to prove that a simple digital tool, if designed properly, can solve everyday urban shopping problems. Through careful planning, design, and testing, we built an Android application to help users quickly identify nearby shops having the products they need. The app uses Flutter for the frontend and Firebase Firestore for the backend to ensure real-time updates, smooth performance, and ease of access

even for non-technical shopkeepers. Our work showed that bridging the gap between local retailers and customers requires nothing overly complex in terms of technology-just efficiency and ease of use. Shopkeepers can update the availability of stock with one tap, while users can have instant search results and community feedback to keep information reliable. During testing, this technology from Findify has been able to cut down the time and effort put into product searches and motivated small shop owners to adapt basic digital practices. This proves that even minimum digital participation can draw offline markets closer to modern consumers. In other words, Findify is not only about making shopping easier but also fosters greater digital inclusion into local retail sectors. Further developing this app, such as by improving filtering, adding offline capabilities, and expanding to more shops, it could evolve into a practical and impactful platform in everyday applications.

TESTING AND EVALUATION

Testing was a major component in the Findify development cycle to make sure that the app behaves properly, results are accurate, and the experience is user-friendly. Different layers of tests were executed to check the system's capabilities, dependability, and speed.

1. Functional Testing

The execution of functional testing was aimed at verifying if the app's features were working according to the expectations. The functionalities of user registration, login, search, and location services were involved in the testing extensively. The updating of stock and toggling of product availability on the user interface were also tested for real-time reflection by shopkeepers.

Result: The primary functions: search, product update, feedback submission, and map navigation were operational without providing any kind of malfunction.

2. Performance Testing

Performance testing helped to discover the app's speed as well as its ability to respond quickly to different network conditions. The app has been tested on several Android devices and internet connections to make sure that it is loading fast and that the response time is short enough.

Result: The real-time database synchronization maintained by Firestore ensured that all updates were done instantly, and the application was stable even when there was a high volume of users.

3. Usability Testing

In usability testing, people from both the user and shopkeeper groups were asked to use the app and to comment on the interface, ease of use, and information clarity.

Result: Most of the users characterized the platform as being intuitive and user-friendly. The ease with which stock can be updated was what the shopkeepers liked the most. The first phase of feedback led to minor changes being made to the layout.

4. Accuracy and Validation Testing

Accuracy testing emphasized establishing that the app is the one that must provide product availability and nearby shops information. Some of the listed stores were visited to verify the authenticity of data manually.

Result: In more than 90% of cases, product availability was consistent with shop data. Looping through feedback verification helped to reduce the instances of inconsistencies.

5. Security Testing

Security testing was meant to assure that user data, location, and shop details were safe from crimes and intrusions. To prevent an unauthorized person from accessing, Firebase Authentication and Firestore's security rules were put in place.

Result: No incidents of data breach or privacy problems happened in the period of the tests. The app followed the standard protocol of data protection.

Overall Evaluation:

The testing was confirmative of the fact that Findify is an efficient tool, and furthermore, it can be regarded as user-friendly and a great intermediary to local stores. It essentially is a customer-centric tool that enables users to accomplish the task of product-hunting in nearby offline stores expeditiously while, at the same time, giving local retailers the impetus to take on easy digital ventures such as this.

FUTURE SCOPE

The Findify initiative is a project with a lot of potential to go on and further and even get bigger. Some future enhancements and research prospects are:

1. AI-Based Recommendations:

Use machine learning algorithms to suggest stores or alternative products depending on the user's previous searches and preferences.

2. Voice Search & Multilingual Support:

The implementation of voice search along with regional languages support will make the application globally accessible for the users who do not speak English.

3. Offline Mode:

Creating an offline data storage system will be beneficial for those users who wish to access the data that has been preloaded and do not have an internet connection.

4. Shop Analytics Dashboard:

A dashboard for shopkeepers where they can see insights like the most-searched products, customer trends, and demand analytics can be created.

5. Payment Integration:

Provide online payment or digital order placement options for those users who want to reserve a product prior to store visits.

6. Expansion Beyond Retail:

The concept may be transferred to a variety of other businesses such as pharmacies, hardware stores, or even service-based businesses like repair shops.

7. Integration with Maps API Enhancements:

Make use of the sophisticated Google Maps APIs for route optimization, traffic analysis, and smart distance-based recommendations.

With these upgrades, Findify is able to transform into a full hyperlocal commerce platform, linking customers to local businesses in a unified tech-enabled ecosystem.

RESULT AND DISCUSSION

Location Services: The app accurately detected users' locations and provided shops around that location within a selected radius. Thus, it helped users navigate the locations efficiently with integrated map directions.

Quick data updates: Firestore's sync allowed updating the stock instantaneously from the shopkeeper to reflect on the user's side without even refreshing.

Maintaining real-time accuracy still depends on shopkeepers updating stock promptly. Summarily, the system achieved its goals: small retailers participate in digital commerce without heavy investment.

In the end, the Findify app successfully validated the concept of digital-assisted local product search, proving that smart, lightweight technology can make everyday shopping faster, smarter, and more connected.

By following these steps research, design, development, and testing, the Findify app was successfully developed as a helpful tool for finding local products in a simple and digital way.

CONCLUSION

Findify is an important step towards bridging the gap between customers and local shopkeepers with a very simple, effective digital solution. In today's fast-paced world, where people sometimes go through a hard time locating specific or rare products in shops nearby, this Android application provides a time-saving alternative that's reliable. Built using Flutter for the frontend and Firebase Firestore for the backend, Findify integrates real-time product updates, user feedback verification, and GPS-based shop discovery into a single user-friendly platform. This was indeed proved through extensive research, design, and testing: even the most basic

digital participation can greatly enhance convenience in offline retail. The shopkeepers could mark the availability of products with ease, while users would confirm it in real time via feedback. Such an interactive engagement not only saved customers from unnecessary visits to stores but also motivated small retailers to start the adoption of digital methods without much effort and expense. The results indicated that Findify works well, updates data fast and accurately, and the integration of maps supports easy navigation. It saves time and physical effort while searching for products during any shopping experience. Furthermore, it has its contribution to digital inclusion by helping local businesses become part of the whole digital ecosystem without complex technologies or training. On the whole, Findify successfully shows how a lightweight community-driven approach modernizes conventional retail markets.

Declaration of Conflicting Interests

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References

1. Chhabra, J. (2020). Factors Affecting Adoption of Retail Technology in Emerging Markets. *International Journal of Retail Studies*, 12(3), 45–52.
2. Gupta, R. (2019). India's Retail Revolution: Challenges and Opportunities. Observer Research Foundation (ORF) Report, New Delhi.
3. Jadaun, S. (2021). A Review on Frontend Development using Flutter and Dart. *International Journal of Computer Applications*, 178(5), 10–15.
4. Saraf, P. R. (2021). Backend-as-a-Service (BaaS): Role of Firebase in Mobile App Development. *Journal of Software Engineering and Technology*, 9(2), 22–27.
5. Kumar, A., & Gawande, A. (2020). Digital Transformation in Local Retail Businesses. *Journal of Business and Innovation*, 15(4), 60–67.
6. Afr. J. Biomed. Res. (2024). Factors Impacting Technology Adoption in Retail, 27(3S), 4102–4111.
7. Google Developers. Introduction to Flutter. Retrieved from <https://flutter.dev>
8. Firebase Documentation. Using Firebase Authentication and Firestore. Retrieved from <https://firebase.google.com>
9. Joginder, C. (2020). Challenges in Digital Adoption by Small Shop Owners. *Journal of Emerging Market Studies*, 8(1), 75–81.
10. Application for Searching Product nearby location Shaik. Saibabavali¹, B. Manikanta², , S.N.Siddhu³, Subrata Chowdhury