Enhancing Barter Trading Experiences with an Online Flea Market

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**Abstract.** Simple, safe, and convenient. That are the three words to describe BarterFlY online bartering system. These days, everything is at our fingertips. We can shop virtually anytime and anywhere. Because of this, online marketplace users are rising significantly. There is a high demand for an online marketplace platform to have features like trade flexibility and support environmentally consciousness. BarterFlY online bartering system provides a modern way to trade by focusing on simplicity, adaptability and sustainability. The system has two easy trading options. First, swap item with item. Second, exchange items with items and cash. Users of BarterFlY can choose one of these methods that suits them best. By having this freedom, the platform encourages the reusage of goods, reducing waste and promoting affordability. Moreover, this system enables public bidding and comments to keep trade fair and transparent. So, everyone can spectate the bidding process. This effort will eliminate bias between sellers and potential buyers. Whether on desktop or mobile device, the system can work smoothly and ensure a good bartering experience for everyone.

# INTRODUCTION

Barter system has been known by everyone since before the invention of currency. The system requires two parties and a physical mutual agreement. The agreement is about exchanging goods such as trading vegetables for clothing or offering certain services in trading for food. Even though after the currency and cryptocurrency exist, bartering is still one of the alternative trading practices nowadays.

By referring to the basic definition and applying it in the modern situation, BarterFlY is built to modernize an ancient barter trading system. While the original version requires two parties to meet physically, inspect the related goods and come to an agreement, BarterFlY able conduct this processes virtually. It will save time and travel money for both parties as they can establish communication virtually and make a deal over the internet. The unique BarterFlY online system offers fair swapping items or exchange with item and cash. The item information such as quality, size and others being display in an advertisement form. The advertisement is being verified by the admins to make sure that everything is legit, truthful and safe. Potential buyers can browse the catalogue that contains numerous verified advertisements and place a bid when necessary. The seller can select the best deal before proceed with postage for seller and payment for buyer. Every transaction is monitored and verified by admins. This system encourages people to reuse what they already must avoid wastage and save cost. All these efforts will make a traditional barter trading process become more engaging and interesting.

## Project Objectives

BarterFlY goal is making online trading more flexible, practical, and easy to use. The system users can choose between two simple ways to trade. Either by swapping items directly or exchanging them for cash. By having this feature, the users can pick whatever works best for both parties. This approach solves the common problems of traditional bartering by adding more convenience and freedom. The platform also puts a strong emphasis on fairness and transparency. With features like bidding and direct offers, users can openly negotiate and stay in control of their transactions, keeping everything clear and well-organized. BarterFlY a community-driven space where people can connect and exchange items with ease while being supervised by the admin. It is practical yet traditional practice in this modern world. While it is designed to work smoothly on any browser, users can hop on anytime, from anywhere. And as more people join, the platform is built to grow right along with them, with room for new features and updates to keep things fresh and user-friendly.

## Target Users

BarterFlY is built to support a wide range of users from students to parents. High school and university students can use the platform to trade or sell things they no longer need. For example, textbooks, study materials, or gadgets such as laptops and tablets. It is a smart, budget-friendly way for students to get what they need without breaking the bank while giving new life to items they no longer use. This kind of reuse not only saves money but also cuts down on waste, which is something many students genuinely care about. In addition to student-related items, baby and toddler products are also in high demand on the platform. Since children grow quickly, many of their belongings are only used for a short time. This makes bartering a practical solution for parents looking to pass things on or find what they need without spending the same amount when buying new items.

Another significant component of the BarterFlY community is collectors. The site offers a fun and simple method to trade, bid, and find new stuff if you're interested in antique cards, retro game consoles, or rare designer goods. You can easily expand your collection and meet people who share your interests, no matter where they are in the world, thanks to features like direct offers and open bidding. Additionally, these tools maintain the trade process transparent and equitable for all parties.

# Literature REVIEW

## Primary Study

One of the main downsides of using Facebook Marketplace is that it does not hold buyers or sellers truly accountable. No supervision by the admin. Mostly relies on users to report problems, which means scams or bad behavior are usually dealt with after the fact instead of being prevented up front. Also, because it's connected to personal Facebook profiles, people who value their privacy might be hesitant to use it. Another drawback is the lack of a bidding feature, which limits more dynamic or competitive trading, as shown in Figure 1.

To solve these issues, our platform includes built-in features that promote fairness, transparency, and better user experience. For example, we’ve added a bidding system right under the "view item" section of each ad, so users can place offers and negotiate more openly. Unlike Facebook Marketplace, our platform is made specifically for trading and isn’t linked to any personal social media accounts. This gives users more privacy and makes the platform more comfortable to use. Especially for those who prefer to keep their personal details separate from their transactions.

The second platform, Swappa. It was founded back in 2010, located in Kansas City USA. It comes with a few key drawbacks. Firstly, to those looking for something beyond electronics, Swappa is not the right marketplace. It mainly focuses on tech gadgets, which limit the variety of items people can trade or sell which make it less appealing as shown in Figure 2.

Secondly, due to profit Swappa charges relatively high seller fees and it is mandatory for every transaction. In simpler words, each time the seller completes a sale using the platform, he or she must pay a fixed or percentage-based fee. This includes for users wo tries to sell low-cost items. Their overall earnings will significantly reduce. This concept can be discouraging, especially for casual sellers or individuals looking to make small trades, as it limits their profit margin and makes the platform less appealing for lower-value exchanges.

A screenshot of a phone

Description automatically generatedA screenshot of a chat

Description automatically generated (a) (b)

**Figure 1.** Facebook marketplace. (a) Advertisement layout. b) Private message box between buyer and seller

A screenshot of a website

Description automatically generatedA screenshot of a phone

Description automatically generated

(a) (b)

**Figure 2.** Swappa marketplace. (a) Catalogue layout. b) Buyer and seller clauses

The BarterFlY system addresses these issues by making trading easier and more flexible for everyone. Users can choose between item-for-item and cash-for-item trades. This feature gives them the freedom to decide on the type of transaction, offering more options for users. To further enhance usability, the system includes advanced search and filtering functions, making it easier for users to find exactly what they are looking for more quickly. To help build trust within the community, a review and rating system is embedded into each account. This encourages safer and more reliable transactions without relying solely on manual moderation.

# SYSTEM Features

The proposed system consists of two main entities: the user (or trader) and the admin. Users, who can act as buyers or sellers, begin by registering with basic information and logging in to access features like browsing, buying, trading, and posting advertisements. Potential buyers can search for items using search features or filters. Once the interested product is found, buyer places bids and wait for the seller to respond to the offers. Once a trade is established, the buyer must upload a transaction receipt image for admin approval. After the admin is approved, the buyer will be notified, and buyer must upload a postage receipt onto the system for approval. Upon approval of both, the transaction is marked as completed successfully. Users can also view their transaction history.

Admin plays an important role here to make sure that all transactions are legit and transparent. For admins, their responsibilities include managing user accounts by removing inactive or fraudulent ones, reviewing and approving advertisements, and ensuring compliance with platform policies. Admins also approve or reject uploaded receipts and postage images, which are essential steps for completing transactions. Their role is crucial in maintaining trust, transparency, and order within the system. Summary of the system can be seen in Figure 3.

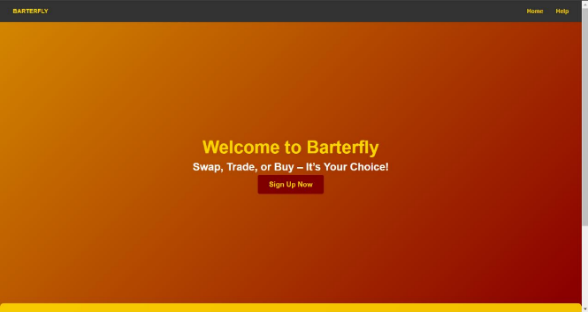
A diagram of safety service

AI-generated content may be incorrect.

**Figure 3.** BarterFlY context diagram

# SYSTEM PREVIEWS

Starts with the homepage of BarterFlY. The user must log in before proceeding. Sign up feature is available if the user does not have any account yet. Figure 4 displays the layout of the homepage.

A screenshot of a computer

AI-generated content may be incorrect.

1. (b)

**Figure 4.** BarterFlY homepage layouts. (a) View without login. b) Layout after logging in

## User Features

For visitors without an account, they must create one and log in to access the barter catalogue and begin trading. During the sign-up process, several pieces of information need to be provided, such as a username, email address, and password. Once the sign-up is successful, the user can log in to access the features available in the BarterFlY online barter system. The user simply needs to enter their registered email address and password. Figure 5 shows the sign-up and login page for a user.

A screenshot of a login form

AI-generated content may be incorrect. A screenshot of a login form

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(a) (b)

**Figure 5.** BarterFlY webpages. (a) Sign-up page (b) Login page

After logging in, the user will be redirected to the user dashboard in Figure 6(a). Users can amend their personal information in the profile section such as mobile number and postage address as shown in Figure 6(b).

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AI-generated content may be incorrect. A screen shot of a computer

AI-generated content may be incorrect.

(a) (b)

**Figure 6.** BarterFlY user layout. (a) User dashboard page (b) User personal information page

Let’s move on to the next feature as users. If a user would like to advertise an item, they must provide the necessary information about it, as shown in Figure 7(a). After submission, the advertisement will undergo a review by the admin. If it meets the admin’s requirements, it will be added to the barter catalogue for public viewing. If a potential buyer is interested, they can make an offer, and the seller will have the option to either accept or reject it. The offer can be in the form of cash, an item, or a combination of both, as shown in Figure 7(b). If the offer is rejected, the potential buyer can submit a new or improved offer. After an offer is agreed upon, the buyer must upload a transaction receipt for the admin's approval. Examples of receipts include money transaction receipts and parcel tracking receipts, as shown in Figure 7(c).

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(a) (b)

A screenshot of a computer

AI-generated content may be incorrect.

(c)

**Figure 7.** User’s barter items. (a) List of items to be bartered waiting for admin approval. (b) List of approved items with barter offer from potential buyers. (c) Transaction page where users can check the progress of their transactions by uploading receipt and postage images for the admin’s approval

## Admin Features

The other important entity in this proposed system design is the admin. Let’s look at its features. The admin can manage item listings, user accounts, and approval requests simply by accessing the dashboard, as shown in Figure 8. Figure 8(b) displays the user management page, where the admin can revoke specific user accounts for any valid reason. Figure 9 shows the admin control panel for managing barter items and overseeing transactions. To avoid any fraudulent activities, admin must review and decide whether to approve or reject any transaction.

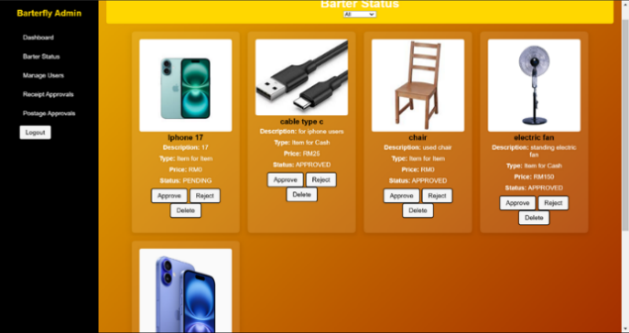
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AI-generated content may be incorrect. A screenshot of a yellow screen

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(a) (b)

**Figure 8.** Admin layout. (a) Admin dashboard. (b) Manage user profile via admin account

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(a) (b)

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(c)

**Figure 9.** Admin approval pages. (a) List of items to be bartered waiting for admin approval. (b) List of items with receipt transaction to be reviewed by admin to avoid fraud. (c) Admin must review the postage image and approve or reject to secure the final barter process

# SYSTEM TESTING

The following tables present a comprehensive set of functional testing scenarios conducted on key features of the system to ensure its reliability, usability, and accuracy. Each table corresponds to a specific module or function, including user authentication (login and registration), advertisement posting, search and filtering, offer management, transaction handling through receipts and postage uploads, and admin approval processes. For each test case, the scenario, expected outcome, actual output, and result status (Pass/Fail) are recorded to evaluate whether the system behaves as intended under various conditions. These structured tests help validate the system’s core operations and enhance user experience by ensuring robust error handling and seamless workflows.

In Table 1, the first test ensures that when a user enters valid credentials, the system authenticates the input correctly and redirects them to the homepage, confirming the login mechanism functions properly. Second test Tests the system’s ability to detect incorrect login credentials and show an appropriate error message, ensuring basic security and usability. The third test verifies that the registration system can correctly process a new user’s details, create an account, and redirect the user to the login page, enabling a seamless registration experience. Lastly, test four confirms that the registration form validation. When required fields are left empty, the system should notify the user accordingly.

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| **TABLE 1.** Login and registration testing | | | | |
| **Test No.** | **Test Scenario** | **Expected Result** | **Output** | **Result** |
| 1 | User enters valid email & password and clicks Login | Redirect to homepage | Successfully logged in | Pass |
| 2 | User enters incorrect email/password | Displays error message | Displays correct validation message | Pass |
| 3 | User clicks Register and fills in all details correctly | Account created and redirected to login page | Successfully  registered | Pass |
| 4 | User leaves required fields empty in Registration | Displays validation error | Shows correct  error messages | Pass |

By referring to Table 2, the first test validates the complete flow of posting a new advertisement with all necessary details. It ensures the ad appears live on the platform's marketplace. The second test checks form validation for posting ads. If any required field is left blank, appropriate error messages should be displayed to guide the user. Meanwhile, the third test ensures that the image upload function works correctly, verifying that supported formats are accepted and the image preview or attachment works. Final test is to validate the file format restrictions for ad uploads. Uploading unsupported files should prompt a clear, user-friendly error message.

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| --- | --- | --- | --- | --- |
| **TABLE 2.** Posta advertisement testing | | | | |
| **Test No.** | **Test Scenario** | **Expected Result** | **Output** | **Result** |
| 1 | User clicks "Post Ad" and fills in all required details | The advertisement is successfully posted | The advertisement in the marketplace | Pass |
| 2 | User tries to post an advertisement  without filling in required fields | Displays validation error | Displays correct  error messages | Pass |
| 3 | User uploads an image for the advertisement | Image uploads successfully | Image is displayed correctly | Pass |
| 4 | User tries to upload an unsupported file type | Displays error message | Shows correct validation message | Pass |

There are two tests for Table 3. The first one is tests the filtering functionality to ensure that users can narrow down search results based on selected categories. Only matching ads should be shown. However, second test confirms that the sorting feature works correctly, displaying ads in ascending or descending price order based on user choice.

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| --- | --- | --- | --- | --- |
| **TABLE 3.** Searching and filtering advertisements testing | | | | |
| **Test No.** | **Test Scenario** | **Expected Result** | **Output** | **Result** |
| 1 | User applies category filters | Only ads in selected categories appear | Filters work correctly | Pass |
| 2 | User sorts ads by price Low to High/High to Low | Advertisements are displayed in correct order | Sorting works properly | Pass |

There are three tests that were conducted and summarized in Table 4. The first test ensures that when a user submits an offer on an item, it is properly recorded and reflected on the seller or trader’s interface. Test number two checks the offer acceptance function. Once accepted, the system should reflect the change in status and log into the transaction history for tracking. Third test verifies that rejected offers update the offer status accordingly and notify involved parties, maintaining clarity in negotiation status.

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| **TABLE 4.** Offer receive system testing | | | | |
| **Test No.** | **Test Scenario** | **Expected Result** | **Output** | **Result** |
| 1 | Buyer/Trader submits an offer of item | Offer is sent Successfully | Appears in Offers Received Section of Seller/Trader | Pass |
| 2 | Seller or Trader Accepts Offer | Offer is Accepted | Transaction Appears on Transaction History for further updates | Pass |
| 3 | Seller or Trader Rejects Offer | Displays Offer is Rejected | Updates the Offer Status as Rejected | Pass |

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| --- | --- | --- | --- | --- |
| **TABLE 5.** Receipt and postage testing | | | | |
| **Test No.** | **Test Scenario** | **Expected Result** | **Output** | **Result** |
| 1 | If User is Buying, User will have to upload a payment receipt | Receipt is Uploaded to the Admin | Successfully Uploaded | Pass |
| 2 | Once receipt is approved, User will have to upload postage image | Postage image is Uploaded to the Admin | Successfully Uploaded | Pass |
| 3 | If User is Trading, User will straight away be able to upload postage image | Postage image is Uploaded to the Admin | Successfully Uploaded | Pass |
| 4 | If both uploads are rejected, User will have to restart the transaction process from submitting offer | Admin Rejects | Transaction Rejected | Pass |

For receipt and postage testing, four tests were conducted. The first test checks the functionality that allows a buyer to upload a payment receipt after an offer is accepted. Ensure the image is sent to the admin for verification. Followed by the second test to confirm that after the receipt is approved, the system allows the buyer to upload postage details (proof of shipment), and the image is correctly uploaded. The next test is for trade transactions (not involving payment), this test verifies that users can upload the postage image directly, skipping receipt upload. Final test checks how the system handles rejected uploads. If both the receipt and postage image are rejected by the admin, the transaction should be restarted by the user.

Table 6 summarizes the admin approval test. The first test verifies that once the admin approves the receipt, the system transitions the user to the next step of uploading the postage image. The second test assesses if, upon admin approval of the postage image, the transaction is marked as completed, signifying a successful end-to-end transaction. Meanwhile, the third test confirms that if either the receipt or postage is rejected by the admin, the entire transaction must be reinitiated, ensuring only valid and verified transactions proceed.

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| **TABLE 6.** Admin approval testing | | | | |
| **Test No.** | **Test Scenario** | **Expected Result** | **Output** | **Result** |
| 1 | Admin approved receipt image | User (buy) can upload postage image | Receipt approved | Pass |
| 2 | Admin approves postage image | Transaction status will be completed | Postage approved | Pass |
| 3 | Admin rejects both images | Transaction process will have to restart again | Receipt or postage rejected | Pass |

# CONCLUSION

Based on the discussion in previous sections, BarterFlY system has been successfully developed as a web-based barter trading system that conquers its objectives. This system has enabled trading flexibility and sustainability to support its users in exchanging goods through item-for-item swaps or cash transactions. This effort will ease people with different needs and preferences to use the system while helping to cut costs and reduce wastage. Not everyone will have money every time. So, this concept can benefit such individuals to purchase without using cash. Although the novelty of this system is not purely visible, but BarterFlY system is developed based on old method and can adapt and align it with latest trends. In simple words, a deep-rooted practice that is still practical and able to fit with modern e-commerce. The bidding feature allows users to make a fair offer and the process is transparent. The comment section will help the seller and potential buyer to communicate directly. This will increase the trustworthy of the platform and make deals clearer.

From the listed features of BarterFlY system, it is obvious that the system supports sustainability by encouraging its users to trade their used items instead of always buying a new one. This original concept might be tedious. One party needs to find another party that is interested in exchanging related goods. Will cash involve is another thing to wonder. Moreover, negotiation and bargaining must happen physically. Now, BarterFly is here to solve the issues. A person just needs to create an account and be a responsible user while using the system. A simple, flexible and easy for everyone to use. It is a great option for people who want a more affordable, eco-friendly and trustworthy way to barter trade in this modern world. Lastly, with room to improve and expand, it is only going to get better for BarterFlY online bartering system.

# Future works

As mentioned in the previous section, BarterFlY has done a great job meeting its goals yet there is still plenty of room to improve. Future improvements could focus on refining current features, boosting security, and adding advanced technologies to improve the overall user experience and allow the platform to scale. One promising upgrade is adding an AI-powered recommendation system. This could help users find items and trading partners more easily by looking at their past activity, preferences, and browsing habits—making the whole process faster and more personal. AI could also be used to detect fraud by analyzing patterns and flagging suspicious behavior.

Since BarterFlY supports both item swapping and cash-based trades, adding a secure payment gateway like PayPal, Stripe, or FPX would make monetary transactions safer and smoother. This would give users more peace of mind when exchanging money on the platform. Another mechanism to improve engagement is by introducing gamification and a reward system. This concept can be applied by offering users the chance to earn points or badges for things like completing trades or milestones, successfully inviting friends, or staying active in the community. Live leaderboards, trade milestones, and loyalty perks would make the experience more fun and help to keep the users’ interest to stay active.

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