



LANCASTER UNIVERSITY LEIPZIG

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Furniture Exchange Platform

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Furniture Exchange Platform

Requirements Gathering Methods & Data Collection

In order to collect the data necessary for thorough analysis, two complementary methods were used, which most effectively reflect public opinion regarding the question of creating a platform for the purchase and sale of furniture: semi-structured interviews taken with residents of several dormitories of Leipzig (Lumis, Basecamp, The Hood, SmartWings), and questionnaires of the residents of Lumis themselves, who provided different views on the question, based on their own experience of purchasing or selling things in different dormitories and the problems that arose as a result of this. These methods made it possible to deepen the given study with diverse, flexible data from various sources and to identify non-trivial behavioral patterns and motivations.

The interview protocol was designed with the goal of systematic collection of data from 8–10 residents of various dormitories with the deliberate selection of 2–3 examples from each identified category of persons: urgent need to purchase a product, exploratory viewing of purchase-sale offers, extremely limited means for purchasing a product, occasional sellers. This selection was made with the goal of covering the widest possible range of user experience and motivation.

Each interview lasts 15–20 minutes and takes place in a question–answer format from general topics to specific ones. In the beginning, taking about 2 minutes, the goals of the research are explained, its confidentiality is explained, and permission is asked for recording the conversation for further transcript and analysis. In the course of the conversation, the interview could deviate from the structure or from the initially set tasks; fragments of the recording in which this happens were not used in the transcript and review. The transcription of the conversation was carried out with the help of a program created by the author of this research, written in the programming language Python with built-in libraries, which ensures accurate translation from oral form to written without loss of information and words of the speaker.

METHOD 1: SEMI-STRUCTURED INTERVIEWS



Below, in order to avoid repetitions in the future, a general protocol for conducting the interview is presented.

Introduction (2 minutes): “Thank you for participating. This interview will take about 20-25 minutes. We're researching how Lumis residents buy and sell items, particularly through the WhatsApp group. Your responses are confidential and will help design a better solution. May I record this for analysis purposes? [Answer]”.

Context (3-4 minutes): “How long have you lived in Lumis? [Answer]. Are you an exchange student or regular student? [Answer]. What's your monthly budget for non-essential items? [Answer].”

Current situation (8-10 minutes): “Have you ever bought or sold items through the Lumis WhatsApp group? [Answer]. Walk me through the last time you tried to buy/sell something in the group. What happened? [Answer]. What was frustrating about that experience? [Answer]. How long did it take from posting to completing the transaction (or giving up)? [Answer]. Have you ever missed a good deal because you couldn't find the listing again? Tell me about it. [Answer]. How do you feel when you see buying/selling messages in the main WhatsApp group? [Answer]”.

Needs & preferences (6-8 minutes): “What would make buying/selling items easier for you? [Answer]. How important is it that items are from Lumis residents only vs. the broader Leipzig area? [Answer]. Would you pay a small fee (e.g., €1) to list an item if it meant better visibility? Why or why not? [Answer]. What information do you need to see in a listing before contacting a seller? [Answer]. How do you prefer to communicate with buyers/sellers? (WhatsApp, in-app chat, email?) [Answer]. What concerns do you have about buying used items from fellow residents? [Answer]”.

Comparative experience (3-4 minutes): “Have you used platforms like eBay, Vinted, or Facebook Marketplace? What did you like/dislike? [Answer]. What features from those platforms would be useful for a Lumis-specific platform? [Answer]”.

Conclusion (1 minute): “Is there anything else about buying/selling in Lumis that we haven't discussed? [Answer]”.

Interview Report - Participant #1

Name: Pierre

Profile: First-year international student

Interview Duration: 23 minutes

Summary

The first interview was taken with Pierre, who at the moment is a first-year student and a tenant of a room in the Lumis dormitory. His experience of finding necessary things in the Whatsapp group Pierre describes as frustrating. According to his words, the process of sending a request for the purchase of a frying pan at 14:00 was buried and spammed by 15:00 with hundreds of other messages not related to his request. Later, Pierre repeated his inquiry at different time intervals, but the effect was the same. In the course of the interview, he also emphasized the inconvenience of a single, non-categorized communication system, in which many different topics are mixed at once, and individual requests soon get lost. As a result, Pierre had to spend a large amount of money to purchase a similar product on other trading platforms, such as Amazon, which could have been avoided if there were a possibility to separate the processes of purchase and sale from other messages.

Observations

Pierre showed visible frustration when describing his scrolling experience and emphasized his sense of urgency multiple times during the conversation. At one point, he opened WhatsApp to demonstrate how quickly messages disappear in active chats. In total, he mentioned urgency or time pressure seven times, underscoring that rapid access to relevant listings is his top priority.

Interview Report - Participant #2

Name: José

Profile: Exchange student leaving soon

Interview Duration: 26 minutes

Summary

José is an exchange student living in the student dormitory Lumis and preparing to leave it in two months upon the expiration of the rental contract. After discussing with him the obstacles in the processes of exchange and purchase–sale of personal property within the dormitory, he expressed several problems that could also have influenced his decision to change his place of residence. As an example of one of such problematic situations, he pointed out that when sending an offer to sell a bookshelf, the message received no reaction from the members of the Whatsapp group, and when resending the message, José was accused of spamming and was blocked. He also noted unrealistic expectations of the buyer, when a certain person interested in purchasing the bookshelf asked him to deliver it to another part of the city, which was impossible in that situation.

In the end, José refused to sell at all and put all his things out on the street with a sign “free.” When he was asked about possible improvements, he clearly expressed his wishes: “If there were a simple application where he could publish an ad once and people could find it, he would use it without hesitation.”

Observations

José expressed a feeling of guilt for spamming the group and showed photographs of the things he did not manage to sell. In the course of the conversation, clear time pressure related to his upcoming departure was evident, which was reflected in his irritation and sense of urgency.

Interview Report - Participant #3

Name: Sandra

Profile: Third-year student with disposable income

Interview Duration: 21 minutes

Summary

Sandra, a third-year student, described herself as a buyer who makes purchases mainly out of interest rather than necessity. During the interview, she gave an example of a missed opportunity for a profitable purchase: according to her words, she managed to find an offer for the sale of AirPods Max

headphones for 300 euros, however, two hours later the advertisement was already unavailable. The respondent noted dissatisfaction with the existing search tools, emphasizing that the keyword search in the messenger gives an excessive number of irrelevant results. According to Sandra, the chat format does not contribute to convenient viewing of advertisements and does not support the “showcase effect,” which she values in the process of shopping. In her reasoning, Sandra proposed the concept of a more visually oriented platform, similar to a social network with an image feed: according to her words, the presence of such an interface would stimulate daily use. The respondent also admitted that her consumer behavior is often determined by aesthetic considerations - she may purchase a product not out of necessity, but because of its attractive appearance and affordable price.

Observations

During the interview, Sandra showed noticeable interest when discussing the visual aspects of online shopping and expressed irritation while demonstrating the limitations of the WhatsApp search function. The repeated mention of aesthetics and photographs indicates the key role of visual perception in her shopping experience.

Interview Report - Participant #4

Name: Alexandr

Profile: Working student with tight budget

Interview Duration: 28 minutes

Summary

Alexander, a student combining study with work, demonstrated a conscious and rational approach to managing personal finances. In the conversation, he emphasized the key importance of transparency and accessibility when purchasing goods second-hand. According to his words, he carefully tracks every expenditure of funds, and the presence of hidden fees or unpredictable delivery costs becomes for him a decisive factor for refusing a deal.

The respondent characterized the existing student trading platforms as slow and unreliable. As an example, he said that he waited for a response to a request to buy a microwave oven for three days, which, in his opinion, makes the interaction process extremely inefficient. Among other problems, he noted incomplete and uninformative advertisements: in particular, a case when an advertisement in Arabic contained only the inscription “15 euros,” without information about the condition or operability of the item.

According to Alexander’s words, the possibility of comparison and filtering of prices is fundamental for him. He noted that when viewing advertisements, he prefers to see a range of offers in order to assess the real market value. At the end of the conversation, he emphasized that the function of sorting by price could significantly increase the convenience of using the platform, confirming that his consumer behavior is primarily determined by considerations of economy and efficiency.

Observations

During the interview, Alexander repeatedly mentioned issues related to price and budget, and also demonstrated a spreadsheet in which he records his expenses. When discussing cases of overspending on Facebook Marketplace, he appeared noticeably tense, which indicates a high degree of emotional involvement in issues of financial control and transparency.

METHOD 2: ONLINE QUESTIONNAIRE

To the question of how long the respondents have lived in the Lumis dormitory, the majority, - four out of seven surveyed, - answered that they have lived there for at least half a year. This means that they already have sufficient experience using marketplaces in the WhatsApp group. Next, a question was asked about their residence status. The largest number of survey participants answered that they rent a room in the dormitory for a long period. The following question concerned the average budget for non-essential goods. The majority, namely five out of seven students, reported that their expenses for such goods do not exceed 200 euros. Then the participants were asked a question about the share of successful purchase-sale transactions carried out in WhatsApp groups. Most answered that only about 40% of exchange attempts were successful.

According to the results of the survey, the overall level of satisfaction with the process amounted to about three points on a scale from one to five, which indicates a divided opinion: some spoke positively about the process, others - as frustrating. Among common problems, most respondents noted the lack of structure and reliability of the existing platform: buyers cannot quickly find the necessary product, and sellers often do not respond, which creates an impression of spam in the WhatsApp chat. A question was also asked about the frequency of appearance of discount offers. Participants noted that such offers appear extremely rarely and often get lost in the chat history without response from potential buyers.

Among the wishes of the respondents who faced the above-mentioned difficulties, most expressed the need for a separate platform that would provide a fast, safe, and structured process of purchase and sale of used goods among dormitory residents. At the same time, most respondents did not insist that such a platform be available only for one specific dormitory but, on the contrary, supported the possibility of its use by everyone who wishes. For this reason, many expressed willingness to use a web application that would make it possible to cover a larger number of users from different residences of the city of Leipzig.

Most respondents also noted that they would like the platform to remain free, since they are not ready to pay for such a service, but at the same time would readily use it. Many participants who described their negative experience most often complained about communication problems and organizational difficulties in the process of buying or selling personal items. In addition, the majority emphasized that the most attractive functions of the future platform are convenient product search, a structured interface, and a safe payment system inside the application.

As a conclusion of the conducted survey among dormitory residents - both Lumis and others located in Leipzig, it can be noted that WhatsApp groups are not a safe and convenient tool for the purchase and sale of personal items, since they do not provide a centralized and understandable platform with a clear structure. Every survey participant supported the idea of creating a separate application or website where exchange could be carried out safely, and also expressed willingness to participate in its development or testing within their available time. Despite the fact that monetization of the platform is not

welcomed by the majority, the possibility of charging a small fee to cover technical maintenance expenses is allowed. Students want to see a simple, structured, convenient, and safe application combining elements of a social network and an online store, which would provide efficient exchange of goods and multi-level communication between users.

COMPLETE REQUIREMENTS LIST

Based on the results of interviews and surveys I conducted, several functional, non-functional, and usability requirements were identified, which are listed below:

FUNCTIONAL REQUIREMENTS and JUSTIFICATION

Item Listing Management:

1. The system shall allow users to create item listings with title, description, price, and photos.
2. Sellers shall be able to upload up to five photos per listing.
3. The system shall allow users to mark items as "sold" or "available".
4. Listings shall automatically be removed after thirty days or when marked as sold.

Users, like they mentioned in interviews, actually wanted a place where they could, you know, toss up their items with a bit of info and some pictures, so this part more or less comes from that wish for a simple posting flow. And, as I was saying, about five photos popped up because people felt one photo was a little too limiting. The auto-removal after thirty days came from survey notes saying listings often get stale, so clearing them out keeps things fresh.

Search and Discovery:

1. The system shall provide a search function by item name or an id.
2. Users shall be able to filter results by category and by price range.
3. Sorting options must include price.
4. A browsable feed of all available items shall be displayed.

Interviews showed folks often struggled to find stuff in other marketplaces, so having a name or id search is that simple fix they kept asking for. Filters like categories and price ranges came up again and again, usually from people who said they “didn’t want to scroll forever.” Sorting by price and a general feed were mentioned as ways to make browsing a bit more natural.

User Communication:

1. App messaging shall be provided between buyers and sellers.
2. Users shall also be allowed to initiate a new contact.
3. Seller contact information shall be shown only after the buyer expresses a specific interest.

Buyers told us they usually need to ask a few tiny questions before buying, so direct messaging seemed absolutely necessary. And, in a way, hiding seller contacts until interest is shown reflects safety concerns people brought up, seemingly small, but it mattered to them.

User Management:

1. Lumis accommodation shall have an email verification.
2. User profiles shall be maintained with contact information.
3. Users shall be able to view their own listing history.

The email verification request came straight out of residents saying they wanted this place to be for Lumis folks only. User profiles and listing history were asked for because people wanted a small sense of continuity.

Favorites and Saved Items:

1. Users shall be allowed to save specific items to buy later.
2. The system must notify users when the price of favourite items changes.

Surveys said many students tend to watch items for price drops, so saving items and receiving updates was clearly something they wanted.



Availability and Status:

1. Item availability status shall be clearly displayed.
2. Sellers shall be allowed to mark items as "pending" during negotiations.
3. Sold items shall be hidden from main search results.

User feedback indicated persistent confusion regarding items that appeared available but were not. Consequently, the implementation of clear status tags such as 'sold' or 'pending' was introduced to effectively resolve this user experience challenge.

NON-FUNCTIONAL REQUIREMENTS and JUSTIFICATION

Performance:

1. The main feed shall load within two seconds on standard mobile internet.
2. Search results must appear within one second of query submission.
3. The system shall support up to 500 concurrent users.

Surveys have indicated that users are dissatisfied with the application's responsiveness, particularly in mobile environments. The established time limits are derived from user expectations for an application. The necessity to accommodate 500 users is predicated on projections of peak system occupancy.

Usability:

1. New users are required to post their initial contribution within three minutes of registration.
2. Users must be able to find a specific item using search within 30 seconds.
3. The system shall be accessible on mobile devices.

New users reported a propensity to abandon the system if the initial posting process was cumbersome. Therefore, the requirement for users to complete their first post within three minutes was established to ensure a smooth and immediate engagement experience. The goal of finding items in

under thirty seconds aligns with general expectations for efficient browsing speed.

Reliability:

1. The system must maintain 99% uptime during peak hours.
2. User data shall be backed up daily, and photos must be stored reliably without data loss.

The community articulated a preference for uninterrupted service operations. This necessitates the implementation of measures that ensure the system's operational efficiency and the establishment of systematic data backup procedures.

Security:

1. Access to the platform shall be strictly limited to verified Lumis residents.
2. User contact information shall be protected until mutual interest is established.
3. The system must comply with GDPR data protection requirements.

Given the localized nature of the marketplace, users emphasized the necessity of preventing unauthorized access by external parties. This user concern necessitates mandatory user verification. The requirement for contact information protection is derived from persistent user concerns regarding privacy.

Scalability:

1. The system shall be designed to accommodate other accommodations in Leipzig.
2. The database shall accommodate up to 10,000 posts without compromising performance.

Interviews with administrators highlighted the potential for expansion to other accommodations. As such, the system architecture accommodates future growth.

Cost:

1. The platform must be free for buyers to use.
2. Listing fees, if any, shall not exceed 1 euro per item, and no transaction fees shall be charged on completed sales.

Survey feedback indicated that students are unlikely to pay significant fees for posting items. Therefore, any fees associated with the platform are intentionally minimal.

USER EXPERIENCE REQUIREMENTS and JUSTIFICATION

Learnability:

1. First-time users shall understand core functions without a tutorial.
2. The system shall provide tooltips for advanced features.
3. Error messages must be clear and actionable.

Participants expressed a preference for intuitive interfaces over lengthy tutorials, therefore, to support first-time users, the platform incorporates tooltips and clear, concise error messages that provide guidance without being intrusive.

Efficiency:

1. Users shall complete a listing creation in a maximum of five clicks.
2. Search filters shall be accessible within two clicks from the home screen.
3. Frequent actions must be accessible from the home screen.

Feedback indicated a desire for rapid posting and, as a result, the listing creation process was streamlined to require minimal steps. Quick access to filtering options was implemented in response to complaints about other applications.

Design:

1. The interface shall use a clean and modern design.
2. Item photos shall be prominent in listings.
3. Prices shall be immediately visible on listing cards.
4. The color tones shall be reliable and trustworthy.

Users emphasized the importance of visual clarity, particularly the ability to view items prominently. The interface prioritizes large images, visible pricing, and a clean overall design, consistent with participant preferences.

Error Prevention:

1. The system shall confirm before deleting listings.
2. Price inputs must be validated.
3. The system shall prevent duplicate listings within 24 hours.

To prevent accidental deletions, confirmation dialogs were added. Price validation and duplicate prevention were also implemented in response to user-reported confusion in comparable systems.

Satisfaction:

1. The system must provide positive feedback after successful actions.
2. Empty states shall encourage and guide users to action.
3. The system must feel faster than scrolling through external messaging apps.

Participants appreciated subtle positive feedback when actions are successfully completed. Empty states were enhanced to avoid the impression of a dead end, reflecting user feedback.

Accessibility:

1. Text shall meet WCAG AA contrast standards.
2. Interactive elements shall be a minimum of 50x50 pixels.
3. The system must be navigable using a keyboard only.

Some respondents noted difficulty reading text in similar applications. Accordingly, the platform adheres to contrast and font size standards and supports keyboard navigation to accommodate users with mobility impairments.

REQUIREMENTS ANALYSIS

Alex Chen - The Urgent Goal-Oriented Buyer

Alex Chen is a first-year student at Lancaster University, who recently returned from such a distant country as Singapore. As an international student, limited by airline weight restrictions, he arrived with only two suitcases, which now causes him significant difficulties in arranging his new accommodation in the Lumis student dormitory, in particular due to a limited monthly budget, calculated at approximately 80 to 100 euros for second-hand items. His main task is to furnish his living space with the minimal possible budget, preferably avoiding problems with long waiting times and transportation issues that would distract him from his main activities.

Alex is on the verge of complete despair due to the problems of the current system, where messages with offers to purchase items get lost in a pile of other unrelated ones. This situation has repeatedly forced him to buy items on third-party platforms at inflated prices and with unpredictable delivery systems.

Maya Rodriguez - The Compulsive Browser

Maya Rodriguez is a 23-year-old third-year student of Business Management and Media Studies, originally from Spain, currently residing in



Lumis accommodation in the process of searching for permanent housing. With a more generous monthly budget of 500 euros for non-essential items, she explores marketplaces with a different goal, which is to acquire quality items at advantageous prices, having a history of searches, a virtual shopping cart, and access to previously viewed products. The existing system, built on a WhatsApp group, does not suit Maya due to its sparse design, inconvenient search functionality, and lack of features typical of online stores, making it almost impossible to establish stable contact with a seller, negotiate a deal, or clarify product information without the message getting lost among others. As a media student with high technical proficiency and extensive social media experience, Maya expects platforms to offer visually appealing interfaces with robust saving and organization features.

Petr Volkov - The Price-Sensitive Buyer

Petr Volkov is a 2nd-year student in Business Management on a scholarship and working 15 hours a week at McDonald's. His total income allows him to spend 80 euro per month on discretionary spending. It is clear to him this situation requires him to analyze his shopping behavior like a corporate employee. His objectives are simple economic efficiency: to find the absolute lowest cost item on the virtual market, remove all extraneous costs, and continue a meticulous survey of the item costs across all markets to build a lowest cost option.

Petr is unable to work around most of these issues, since he does not have integrated marketing costs for the total order, has incomplete listing entries on his target item, listing the target item in a complicated foreign language, has no price sorting at all or grid functions on the target item, and is required to pay excessive auction costs on other sites when the WhatsApp queue does not fulfill his needs. Moderate digital tools familiarity calls for a functional shopping interface to clear and simple organized data to support optimal decision processes.

Sarah Thompson - The Occasional Seller

Sarah Thompson, who is a twenty-year-old second-year Computer Science exchange student from Lancaster University, is, in a way, facing a tightening schedule as she prepares to leave Lumis accommodation in just three weeks. This limited timeframe, as a matter of fact, places significant pressure on

her need to sell the furniture she purchased upon arriving. Her objectives tend to be clear and fairly time-bound: she aims to sell her items quickly, avoid any delivery or transport-related demands that she, quite frankly, cannot meet, secure prices that are more or less reasonable, and keep the management of her listings a little lighter since she is, in some respects, occupied with departure preparations.

In examining her experience, it becomes apparent that the current WhatsApp system creates a set of obstacles that, in a way, amplify her urgency. Her listings usually become buried almost immediately after posting, making it extremely difficult for potential buyers to notice them. Attempts to repost for visibility often result in accusations of spamming, which, as I was saying, discourages her from using legitimate visibility tactics. Buyers sometimes request delivery to distant parts of the city, an expectation that is, clearly, unrealistic given her limited time and lack of transport resources. The absence of any persistent placement or structured listing system, similarly to older informal marketplaces, leaves her unable to maintain consistent exposure for the items she needs to sell.

Given her technical background, Sarah typically understands what digital marketplaces ought to provide, so encountering a setup that is nearly fragmented, fairly inefficient, and arguably unreliable generates noticeable frustration. Her situation, in short, highlights the mismatch between the urgency of her goals and the limitations of a system that, in some respects, fails to support time-sensitive transactions for temporary residents.

Scenarios

Alex's Urgent Kitchen Emergency

Alex Chen, who moved into his Lumis accommodation just three days ago, is already in a situation that, in a way, feels pretty urgent. He arrived from Singapore with barely anything, and now he's sitting there with no cookware at all and only thirty euros left for things he, frankly, needs right away. A frying pan, for example, is that one item he absolutely needs if he wants to put together even the most basic meals. At about fourteen hundred hours on his first day, Alex posts a short message in the WhatsApp group asking if anyone has a frying pan to sell. By fifteen hundred hours, the message is more or less lost

under fifty or so new posts about washing machines and shared-space bookings. At seventeen hundred hours he tries again, thinking a different moment might help, yet the second message also gets buried by around twenty hundred hours once everyone starts chatting again after their day. He still gets no replies.

On the second day, Alex tries scrolling through the group chat to look for older posts that might mention kitchen items, but the huge pile of messages and the total absence of any proper search feature make the process feel, basically, impossible. By the third day, with nothing left to try in the Lumis chat, he finally gives in and goes on eBay, buying a frying pan for twenty-five euros plus eight euros shipping. That choice, naturally, forces him to wait about five days for it to arrive, and he ends up living off dry instant ramen in the meantime since he doesn't have so much as a pot to heat water. This situation, in some respects, points straight at the biggest weak spots of the current setup: there's no way to keep listings visible over time, no simple search tool to help him look up "frying pan," no category view to show only kitchen items, no sorting option to highlight items that are ready for immediate pickup, and no response speed that meets anything close to the expected one-second search performance described in the non-functional requirements.

In a version using the proposed platform, Alex would open the app and type "frying pan" into the search bar, and the system would, basically, show results within a second. He'd see three pans priced at five, eight, and ten euros. He would then use the location filter to show only Lumis listings so he could pick something up without any travel issues. After that, he'd message the seller through the in-app chat, set a pickup for that same evening, and finish the whole thing in roughly five minutes. He would spend far less money and avoid those extra days of trying to get by without anything to cook with.

Maya's Lost Opportunity

Maya Rodriguez's experience shows, in a way, a different failure of the WhatsApp system, as she is scrolling the Lumis group at around twelve hundred hours when she notices a photo of AirPods Max listed for three hundred euros, which she instantly recognizes as a strong deal but decides to think about for a few hours while going through other parts of her day. When she returns at sixteen hundred hours ready to buy them, she discovers that finding the post again is nearly impossible, since by sixteen hundred five hours she is already

scrolling through hundreds of new messages and realizing the listing has completely disappeared under unrelated chat activity.

At sixteen fifteen hours she tries searching “AirPods,” yet the results, which show a bunch of vague posts with captions like “selling this,” force her to open each one manually, and by sixteen thirty hours she posts a new message asking who the seller was, only for her question to sink out of sight the same way the listing did. By the next day she learns that the headphones were sold to someone who happened to be online at the exact moment of posting, leaving her with no real way to revisit or track something she genuinely wanted. This situation highlights how the system lacks the ability to save items for later, doesn’t provide persistent searchable listings, has no standardized format that makes searching workable, offers no visual feed for browsing, and gives no notifications when items change status. In the proposed platform, Maya would see the listing in a clear feed, save it with one tap, return four hours later to her Saved Items section, contact the seller through in-app messaging, and finish the purchase in about two minutes instead of losing the opportunity altogether.

Scenario 3: Petr's Microwave Hunt

Petr Volkov’s situation, which in a way highlights how tough the WhatsApp setup can be for anyone watching their budget closely, begins on a Monday at around eight hundred hours when he posts a quick message asking if anyone has a microwave to sell, and then heads off to lectures and later his shift at McDonald’s while checking the group every now and then, only to notice that no one replies through Monday, Tuesday, or most of Wednesday. By about fifteen hundred hours on Wednesday, he finally spots what looks like a microwave photo, yet the caption is written in Arabic, and when he uses the translation tool he gets text that is, basically, almost unreadable except for the “15 euro” price tag, which seems a little too low and leaves him unsure about whether the appliance actually works, especially since he cannot communicate clearly with the seller. By Thursday, after spending three days waiting for something reliable to appear, Petr gives up on the Lumis chat and heads to Facebook Marketplace, where he eventually finds a microwave for exactly thirty euros, which is the last bit of money he has set aside in his spreadsheet for non-essential items, but the listing is on the far side of Leipzig and forces him to spend roughly ninety minutes traveling by bus and tram, cutting into time he could have used for studying or picking up extra work hours.

This whole scenario, in some respects, shows how the system leaves price-sensitive students like Petr without any way to compare multiple listings, no clear or consistent post format to avoid confusing captions, no simple price filters or sorting tools, and no response speed that feels even a little reliable, which pushes him to spend more time and money than he planned. In the proposed platform, Petr would type “microwave” into the search bar at eight hundred hours on Monday and, within one second, see five Lumis listings priced at twelve, fifteen, twenty, twenty-five, and thirty euros, after which he would sort them by price, tap the twelve-euro option to read a clear description, message the seller to check that everything works, and arrange a same-evening pickup inside Lumis, completing the whole thing in less than half an hour and staying well under his budget without traveling across the city.

Scenario 4: Sarah's Departure Deadline Dilemma

Sarah Thompson’s situation, as a matter of fact, shows how a bit of time pressure pretty much wrecks any seller who relies on the current WhatsApp setup. She has three weeks before she has to leave Lumis, and she, like, really needs to get rid of a bookshelf and a chair she picked up at the start of the year. On Monday at nine, she snaps a few photos, adds short notes with the sizes and prices, and drops two posts in the Lumis chat-forty euros for the shelf, 25 for the chair. By the evening, though, both posts are basically swallowed up by long arguments about laundry rules and noise complaints.

On Tuesday morning she reposts, hoping someone new might be around, yet by the afternoon other residents are, in a way, calling her a spammer for trying again. Around sixteen hundred, she finally gets one message from someone who wants the shelf but, of course, asks her to haul it eight kilometers to Basecamp. She does not have a car or cash for delivery, so the buyer backs out. Through the rest of the week she tries posting at different times, but the quiet moments tend to be the ones where nobody is even checking the chat. By the start of week three, she had seven days left and still no buyers. She is tired, stressed, and, basically, out of ideas. She puts both things on the sidewalk with a “FREE” sign, and they are gone within hours-leaving her with zero euros for items that cost her one hundred twenty.

This whole mess, in a way, shows how the WhatsApp system pushes sellers into corners: posts vanish fast, reposting gets labeled as spam, buyers ask

for stuff she cannot offer, and group attitudes turn a bit hostile. In a setup where listings stay visible for thirty days, where she can clearly say “pickup at Lumis only,” and where buyers browse through proper categories, Sarah would take maybe fifteen minutes to upload her photos, then spend a little time chatting with interested people. Within a few days, she had more or less sold both items for 65 euros total.

Task Analysis

The task analysis examines all components within the project's scope by breaking down the primary user activities into their constituent steps, identifying the specific requirements that support each step, and analyzing the cognitive and physical demands placed on users by the current system compared to the proposed platform.

Creating and Publishing an Item Listing

Creation and publication of a listing, as a matter of fact, represents a basic procedure that tends to be mandatory for sellers to take part in the marketplace. In the current setup through WhatsApp, this process more or less turns into a rather bulky chain of actions: the user first makes photos of the item through the phone's camera, then goes into WhatsApp and looks for the Lumis chat among other dialogs, after which they are forced to wait for the chat to load, a wait that sometimes becomes quite long with a big volume of past messages. Next the seller composes a text description, including the item's name, its condition, the price, and other details, attaches the photos, carefully checks that the information is complete, and only then sends the message to the group. This scheme, in a way, carries a set of noticeable inconveniences: it requires constant switching between apps, pushes the user to keep a needed set of details in memory, gives no chance to preview how the listing will appear to buyers, and doesn't let them edit a message after sending, instead they have to post a new one, which often gets taken as spam.

The proposed platform, in the meantime, completely simplifies and structures this process. The user opens the app and sees a “Create Listing” button right on the main screen, pressing it starts an intuitive form with clearly marked fields for the title, description, price, and the item's category, all pretty much matching the set formatting requirements. Using the built-in photo upload

function, one can choose up to five shots from the gallery or take new ones right in the app. The system automatically checks that required fields are filled and that the data looks correct, giving hints in case of mistakes or omissions, which slightly lowers the chance of errors. Before publishing, the seller can look at a preview of the listing, and the sending happens with a single button press. In the end, the whole process fits into no more than five clicks, and a newcomer usually can create their first listing in about three minutes.

Such a setup brings, basically, clear advantages to all marketplace participants. For sellers it lifts extra load, shows exactly which details should be provided, removes the need to jump between apps, and keeps the look of all listings consistent. For buyers this means getting listings in a predictable, easy-to-read format, which increases trust in the platform and makes choosing items simpler. In general, the new system makes the listing process transparent, quick, and comfortable, significantly improving the user experience.

Searching for and Discovering Items

The task of searching and discovering goods, in a way, covers the actions that buyers carry out when they look for needed or wanted things. In the current WhatsApp implementation this process almost turns into a serious problem and often ends in failure, which is confirmed by real examples from practice. A buyer who is looking for a specific item has to perform a set of labor-heavy actions: open the WhatsApp group, use an extremely limited search, manually scroll through hundreds or even thousands of messages if the search turns out ineffective, try to pick out items among photos mixed with casual conversation, check whether the offer is still current by looking at message dates and related chat, and sometimes send a request into the group - which might get no answer at all. Such a process takes a lot of time, causes irritation, and often doesn't lead to the desired result. For example, Alex spent three days searching for a frying pan, and Maya couldn't find again a listing she had seen just a couple of hours earlier.

In the proposed platform the process of searching and discovering goods becomes quick and reliable thanks to a set of functional solutions inside the Search and Discovery module. When opening the application, the buyer immediately sees a feed of available goods with clear photographs and clearly shown prices - this matches the visual design requirements. To search for a

specific item, the user enters the name or another identifier into the search bar, getting results within one second - which fits the performance requirements. Next the buyer can use filters for category and price to narrow the selection within their budget and needs, and then sort the results by price to quickly see the most affordable options. The whole process is meant to be completed in no more than two taps from the home screen, and the time for finding a specific item through the search system must not exceed thirty seconds - such parameters are written in the usability requirements. As a result, the cognitive load on the user, more or less, drops to the minimum: all information is presented in one clear format, goods are assumed to be current by default, and the intuitive interface with a clear visual structure lets the buyer move through the full path from searching to choosing without trouble.

Communication Between Buyers and Sellers

The task of establishing and maintaining communication between interested buyers and sellers, in a way, is a critically important element for successfully completing deals. In the current WhatsApp-based system, communication happens in a public group chat where all thousands of participants, basically, can see the conversation. A buyer who finds an item they're interested in has to send a message into the general chat, either mentioning the seller or replying to the original listing. Then they wait until the seller notices this message among, sometimes, hundreds of others, start a bit of early negotiation, and answer questions in a public space where both sides might feel a little uncomfortable discussing specific details or prices. In the end, they usually have to exchange personal contact information, phone numbers or private WhatsApp accounts, to continue the conversation in a private format, and only after that agree on a time and place to hand over the item through this closed channel.

Such a process, as a matter of fact, creates several serious problems: it reveals personal contact information too early, which goes against safety requirements, raises concerns about privacy because negotiations happen publicly, clutters the group chat and causes irritation among other users, and leads to noticeable delays since messages can be missed in the stream of unrelated conversations. The proposed platform solves these issues through the functional requirements for user communication. When a buyer views a listing and wants to show interest, they press the “Contact Seller” button, which starts a

private conversation in the app's messaging system. The seller's personal contact information, phone number or email, stays hidden from the buyer until both sides, basically, show mutual interest. This fits the safety requirements and the communication rules.

All communication happens in private chats accessible through each user's personal profile. This removes clutter from the public space and provides a persistent record of the conversation that both sides can return to whenever they need. The messaging interface keeps the context clear: next to the conversation, the related item listing is shown, making it easy to refer to specific details. Users can run several parallel conversations with different people about different items - each dialogue stays organized and easy to reach. This structure protects user privacy, reduces social tension by removing public negotiations, provides accountability through saved chat history, and significantly improves communication reliability compared to the current system, where messages, in some respects, tend to be missed or simply ignored.

Managing Listing Status and Availability

The task of managing the status of item listings, in a way, represents a critically important action that keeps information about item availability current and prevents buyers from making pointless inquiries about things that are already sold. In the current WhatsApp-based setup there is, basically, no structured mechanism for handling this. Posted listings stay in the group chat history forever, more or less, regardless of the real status of the item - whether it's available, in the middle of some ongoing discussion, or already part of a completed deal. In cases where an item sells quickly, a seller might post an extra message with a "sold" note, yet this message inevitably gets separated from the original listing as new chat activity piles up. Buyers scrolling through chat history have no quick way to understand the current status without digging through later messages, which sometimes run into hundreds. Quite often sellers don't update the status at all, which leads to multiple inquiries about items that are no longer available, causing unnecessary time loss and irritation for both sides.

The proposed platform, as a matter of fact, introduces a complete status-management system that fits the functional requirements for posting listings and controlling availability. Sellers get the ability to mark items with

three clearly separated statuses: “available” for items open for sale; “in discussion” for items currently being negotiated with a potential buyer; “sold” for completed deals. The system automatically removes sold items from the main search results, so buyers, basically, only see options that are actually available. At the same time, sold items stay in the seller’s personal listing history for reference. The availability status is shown clearly on item cards and in detailed views using visual indicators, like color markings or clear text labels that, in a way, follow WCAG AA accessibility standards.

To prevent buildup of outdated listings, the system automatically removes items that haven’t sold within 30 days. This keeps the platform from getting cluttered with old listings from sellers who forgot about them or stopped using the service. Introducing this setup gives several noticeable advantages: buyers get reliably current information about available items; sellers can manage their listings without posting multiple extra messages; the platform stays relevant by removing outdated offers; both sides avoid the annoyance of contacting each other about items that are no longer accessible.

Saving Items for Future Consideration

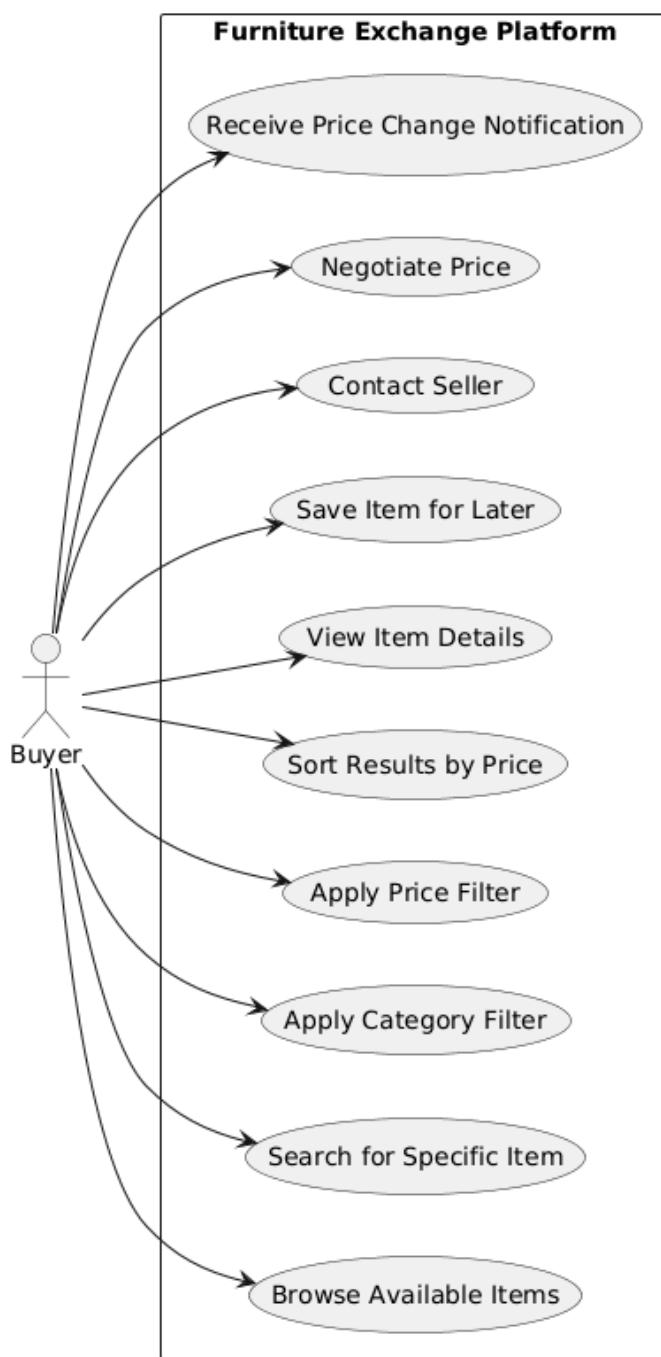
Buyers sometimes come across interesting items but are not ready to make a purchase right away or get in touch with the seller. In the WhatsApp-based system there is no function for saving listings, which more or less creates serious inconvenience. Users have to rely on workaround methods like marking messages in WhatsApp, taking screenshots or hoping they will manage to find the listing later. All of these methods tend to be ineffective, since they don’t notify about price changes or sale status, make searching harder as data piles up and often lead to losing important information.

The proposed platform solves this issue through a saving function for listings. A user can add an item they like to the Saved section through a Save or Favorite button. In the personal profile an ordered list of all marked items appears with their current status such as available, in process or sold. The system automatically sends a notification when the price drops, letting people keep track of items that were, at first, outside their budget. Additional actions are available too, including adding personal notes to listings, removing items that are no longer interesting, and sorting or filtering by category, price or date

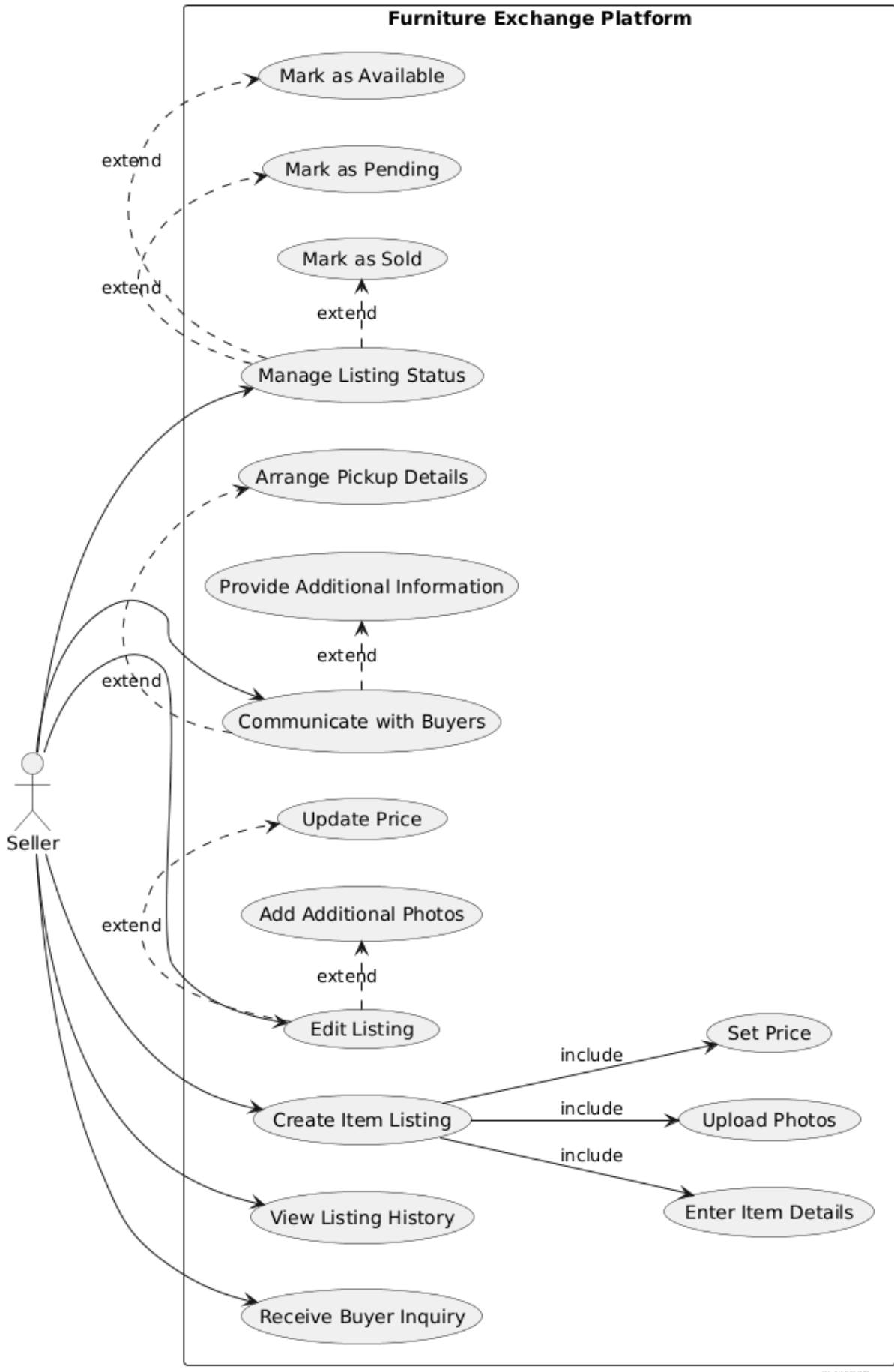
saved. This setup, in a way, simplifies purchase planning, increases user engagement and gives sellers new chances to attract potential buyers.

Use Case Diagrams

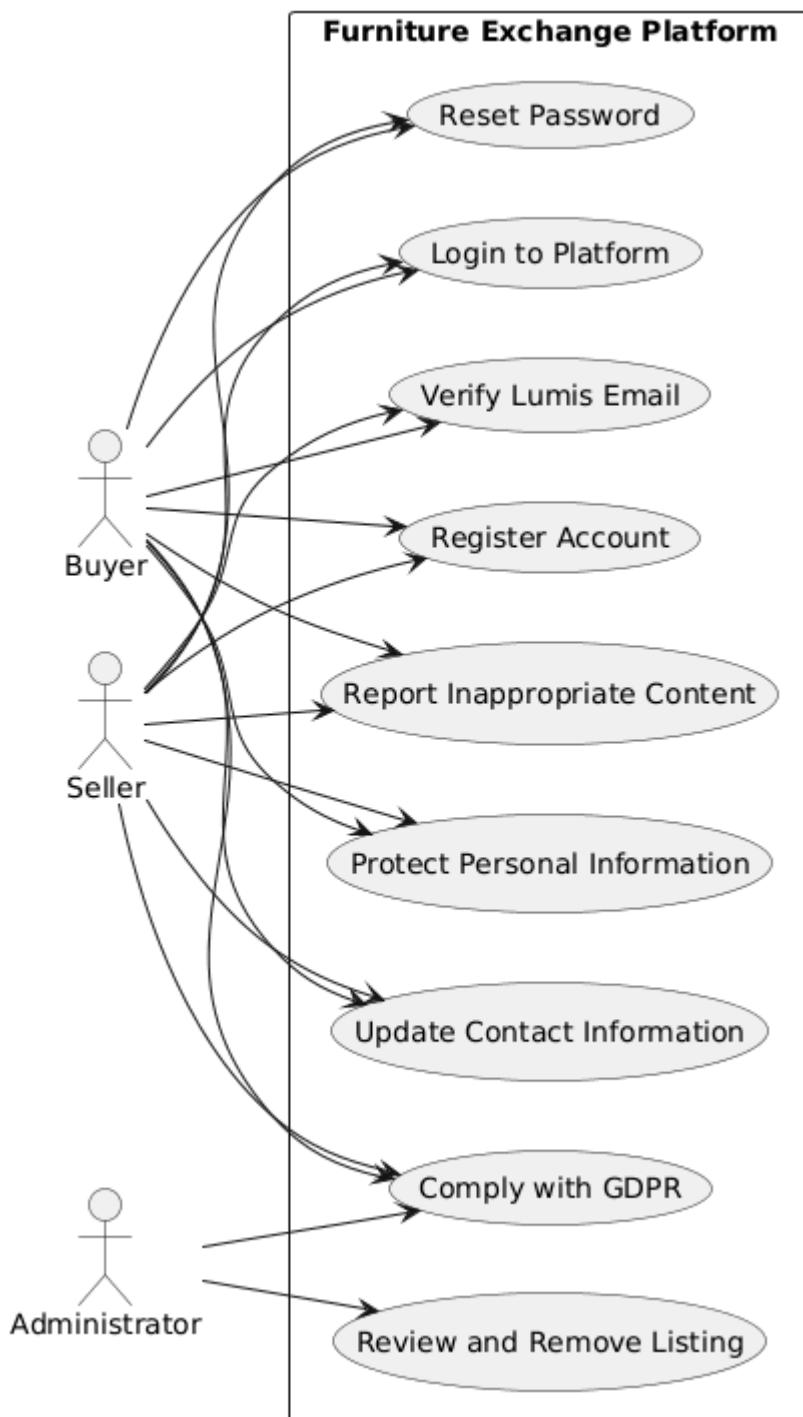
Buyer Interactions



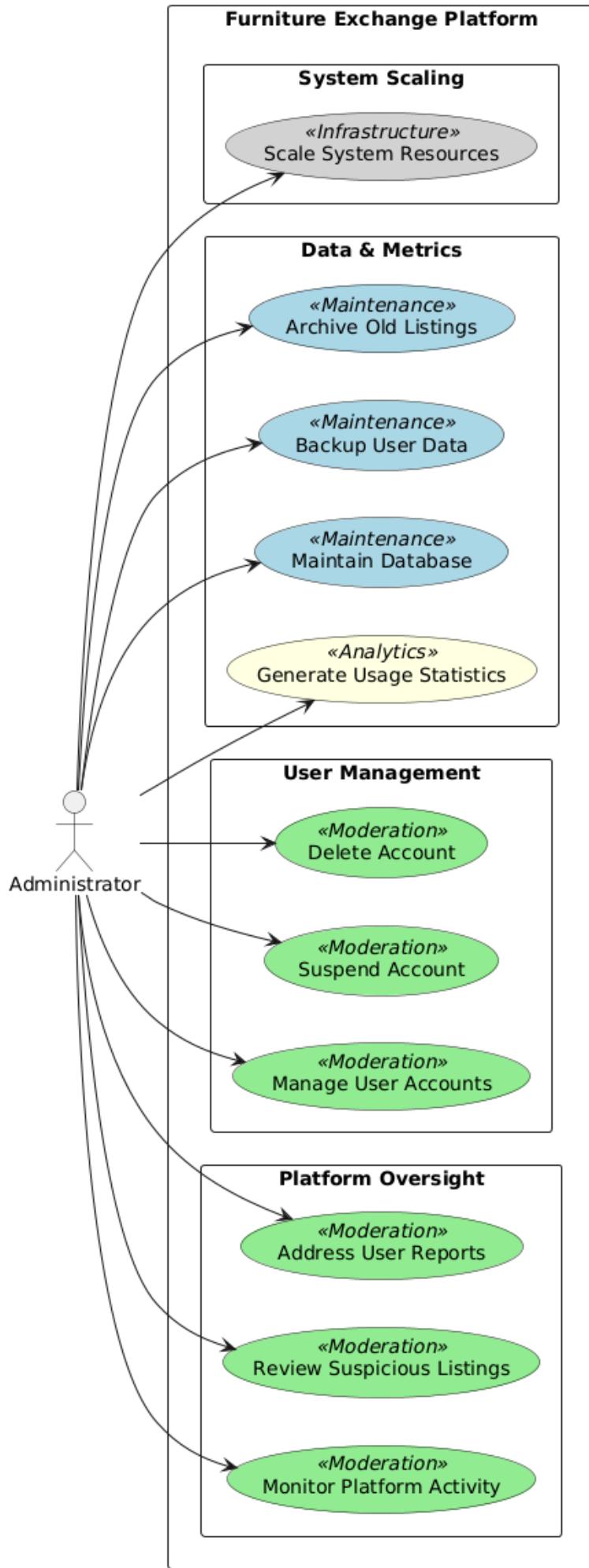
Seller Interactions



Authentication and Security



System Administration

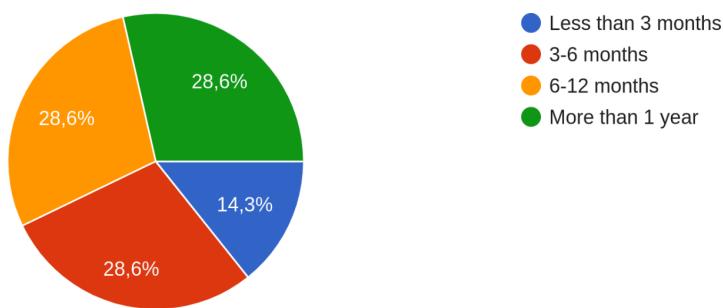


Attachments

Attachments:

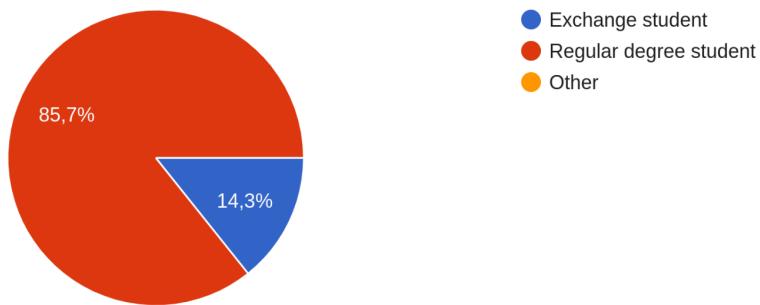
How long have you lived in Lumis?

7 ответов



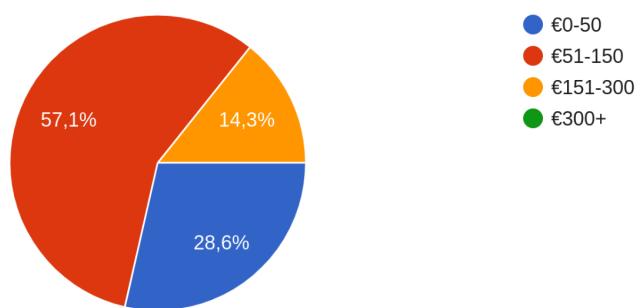
What is your status?

7 ответов



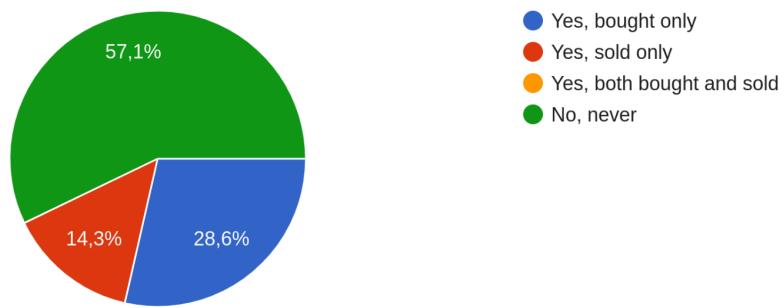
What is your monthly budget for non-essential items (furniture, electronics, etc.)?

7 ответов



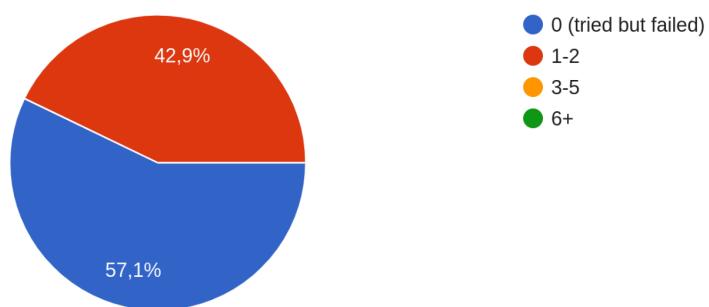
Have you ever tried to buy or sell items through the Lumis WhatsApp group?

7 ответов



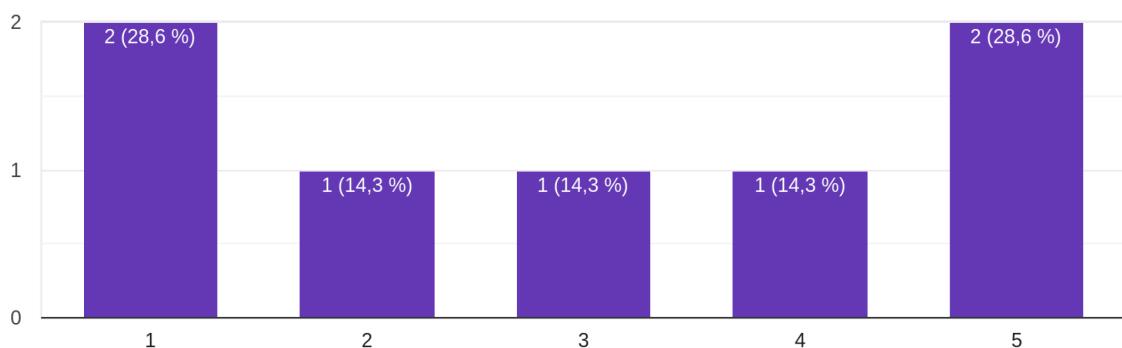
If you've bought/sold items, how many transactions have you completed?

7 ответов



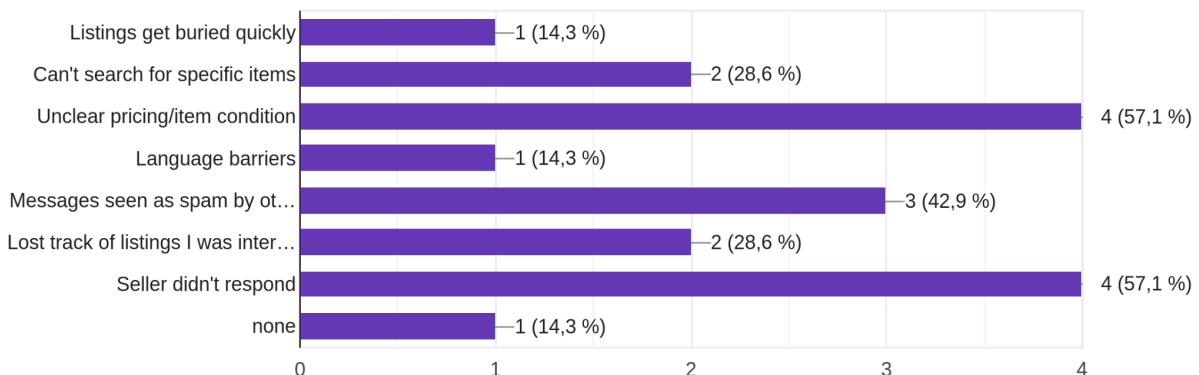
How satisfied were you with your buying/selling experience in the WhatsApp group?

7 ответов



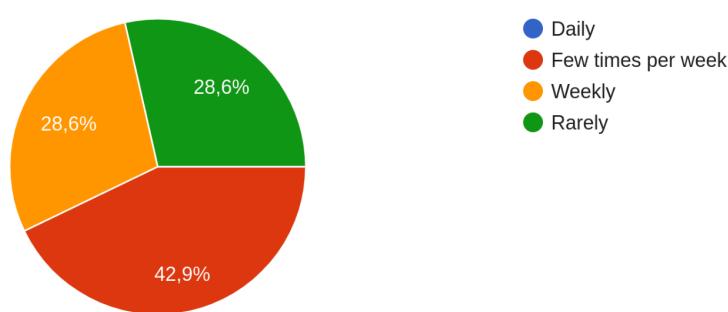
What problems have you experienced?

7 ответов



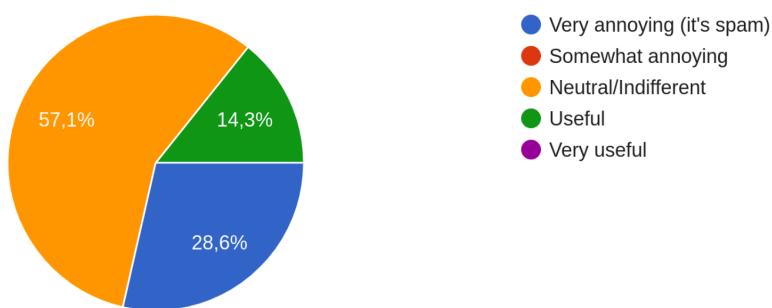
How often do you see buying/selling messages in the Lumis group?

7 ответов



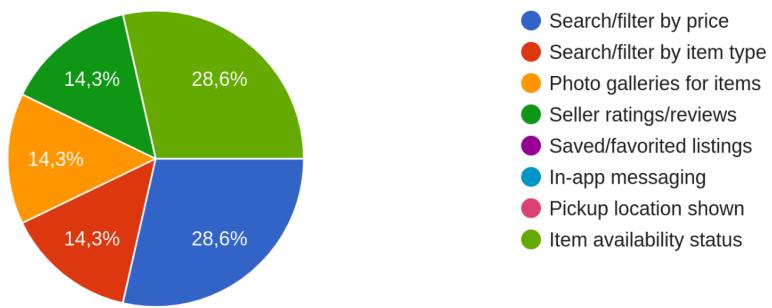
How do you feel about buying/selling messages in the main WhatsApp group?

7 ответов



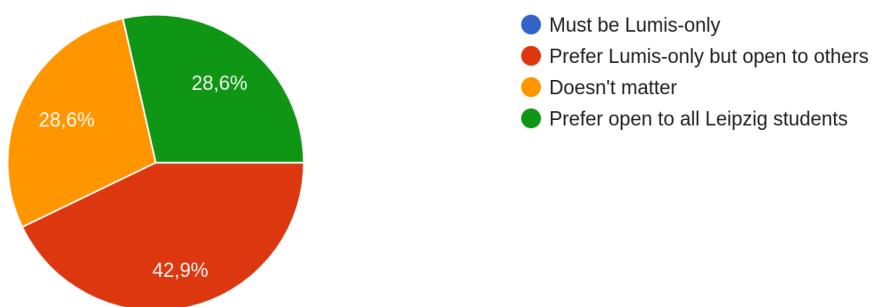
What features would make buying/selling easier?

7 ответов



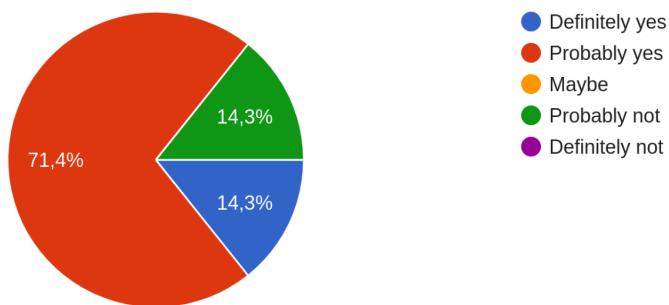
How important is it that the platform is Lumis-only vs. open to all Leipzig students?

7 ответов



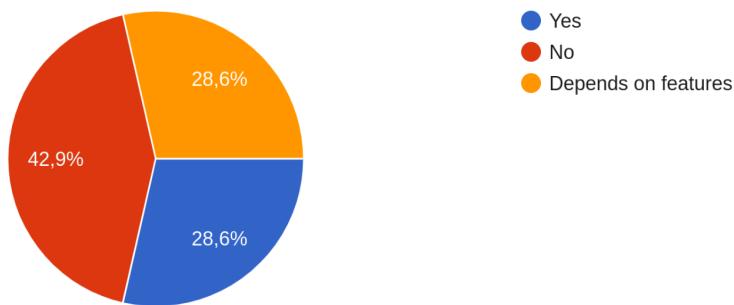
Would you use a dedicated app/website for buying/selling within Lumis?

7 ответов



Would you pay a small listing fee (€0.50-€1) if it meant better visibility and features?

7 ответов



Which part was the most frustrating in buying/selling in the Lumis WhatsApp group:

7 ответов

Message gets buried by many other messages

none

Dealing with a buyer who engages in lengthy negotiations, confirms the sale and pickup logistics, and then completely ghosts the seller, forcing a time-consuming relisting

N/A

Nothing

-

The sellers often leave their listings up after it sold, which is what I experienced once. It was frustrating to get a response from him 3 days later saying it sold.

What one feature would make you use a dedicated platform instead of WhatsApp?

7 ответов

Search function

Plenty of products

Discord

Item availability status

Location and exact price

-

Availability and pick-up status