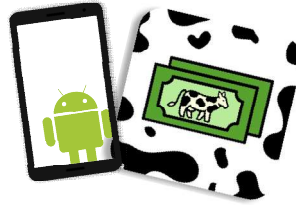


CashCows



Annalaura Granata, 1999328
Zoe Matrullo, 1985908
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Emanuele Segatori, 1932373

Simplifying group expense sharing

CashCows is your go-to app for **effortlessly managing and splitting group expenses**. Whether you're planning a trip, sharing bills, or organizing events with friends, CashCows streamlines the process, saving you time and hassle.

Key Features:

- **Create Groups:** Easily set up groups for different activities and events.
- **Add shared expenses:** Quickly add expenses and let CashCows do the math.
- **Track the shared expenses:** Keep an eye on all shared expenses in one place.
- **Reject expenses:** Ensure accuracy with a simple contest feature, giving you 48 hours to review expenses before they are finalized.

Need Finding: understanding the users through interviews and surveys

Interviews

We interviewed 25 people of ages between 18 and 84¹. Here we summarize the main discoveries that we noted down during the interviews.

1. Almost every person interviewed uses online banking services (bank apps, money sharing apps, investment apps, expense tracking services).
2. The majority of the people interviewed prefer paying by card instead of using cash since they find it faster, more convenient and easier. Of the ones preferring cash (4 out of 25), 2 were over 50 y.o. and 2 were 20-25 y.o.
3. Out of 25 people interviewed, the majority (68%, 17 people) use 2 or 3 online banking services. 24% use only 1 application/software (6 people) while only 8% of those interviewed use 4+ online banking tools.
4. People didn't mind too much about having multiple services, because they want all the features that each of them offers. However they desire more compatibility and less fees between all the various banking applications used (e.g. PayPal requires a fee when transferring money from your PayPal account to your own bank account).

¹ 14 people between 18-24 years old
3 people between 25-30 years old
7 people between 50-69 years old
1 person over 80 years old

5. The need to share money with friends/family varies greatly from never to almost daily, depending on the age. Almost all the interviewees between 18 and 30, regularly share money with other people, while only few people above the age of 50, send/receive money digitally to/from other people.
6. When using banking apps to share money with other people, interviewees complained about the lack of compatibility between all the different apps. This problem arises especially when banking apps are used among large groups of friends who may have different banks and applications. Several interviewees bypassed these problems when they started using apps like Paypal, however they are still not entirely satisfied. Some of the interviewees noted that PayPal is very convenient because it can be linked to cards from different banks, allowing to share money easily and without fees even between different banks. Revolut has some very appreciated features that PayPal does not have like group expense sharing, but Revolut is a bank and so in order to access these features you must have a Revolut bank account and you cannot link other bank cards to it.
7. Saving money is hard for most of the interviewed people, with ~25% not having difficulties
8. 68% of people would be interested in a tool to track expenses, ~20% are not interested in this kind of tool. Two people find the idea interesting and useful but personally they don't want to look at their own financial expenses, while one of the interviewees underlined that even though it is a very useful service, it should be easy to use.
9. Expenses tracking is provided by the majority of the used banking apps, but users complain that sometimes it is not very accurate or easy to understand

The interviews allowed us to pinpoint a few topics to investigate further in the surveys:

- Number of banking apps used and compatibility among them
- Habits concerning money sharing between people and related difficulties
- Expense tracking habits

In addition to them, we also added questions to find out which apps are the most used, the level of intuitiveness of their UI and the most preferred features.

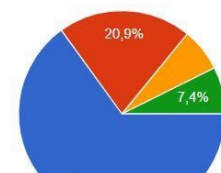
Survey

After creating a pilot survey, and getting feedback on it by 12 people, we made small adjustments and came up with the following questionnaire. We gathered 163 responses, and these are the results of the survey:

Age

The majority of the sample was users between 18-24 years old, followed by people between the ages of 25-34 and a few of 35+.

Age
163 risposte

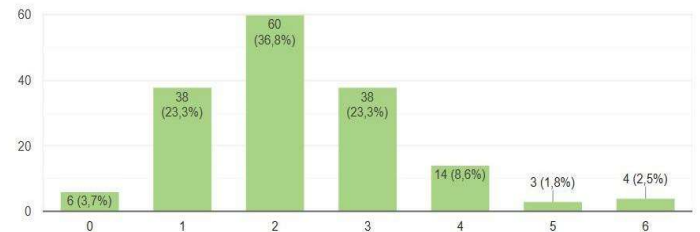


Occupation

Regarding the type of user again the vast majority were students and the remaining were mostly workers.

How many online banking services do you use?

The majority use between 1 and 3 online banking services (83,4%). A small number of people use 4 or more banking services (12.9%).



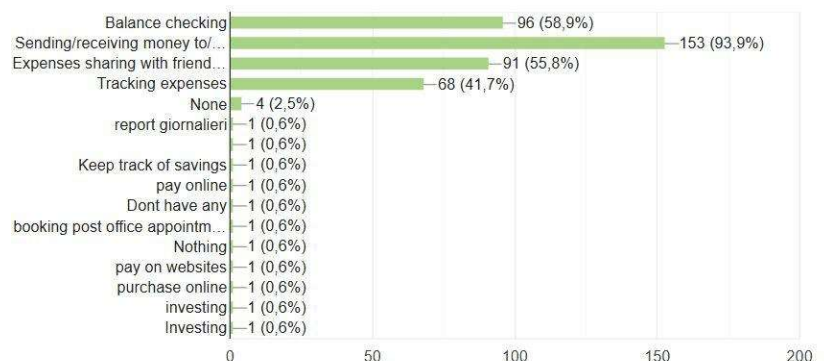
If you use more than one, why?

Most people use more than one banking app for the different features different apps provide. In particular many users have one related to their bank account and one that provides quick money transfer/money sharing with other people.

Which one do you prefer and why?

People tend to prefer apps that provide more services and features together, especially sending money to friends and shopping online with high security.

The most preferred apps were PayPal and Revolut for their convenience and features provided.

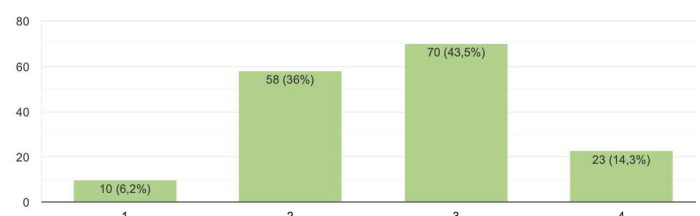


Which features of your online banking app/apps do you use?

Among the most used features we have sending/sharing money both peer to peer (over 90%) and within a group (over 55%). The second most used feature was balance checking.

Is there any inconvenience while using your online banking apps?

The main inconvenience challenging the users is missing features. That is followed by the slowness of the app and a hard to navigate interface. Very few people complain about the level of security.

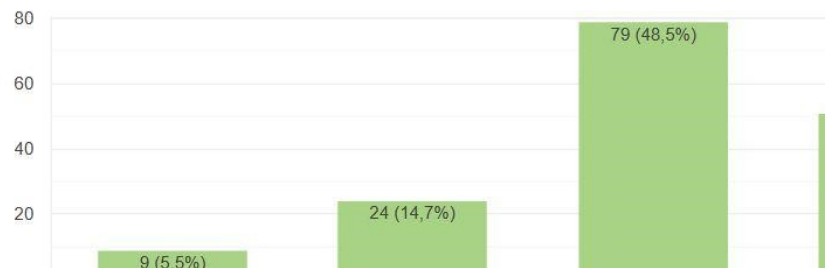


How intuitive are your banking apps to navigate? (1 being not intuitive at all and 4 very intuitive)

A little over 70% of the sample found sufficiently clear to navigate the apps while another combined 68% found the UI confusing or very confusing

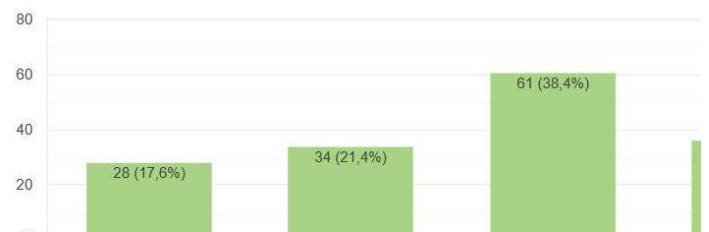
How often do you share money with friends and family? (1 being never and 4 often)

Sharing money with friends and family turned out to be a widely used service by the majority of the interviewees.



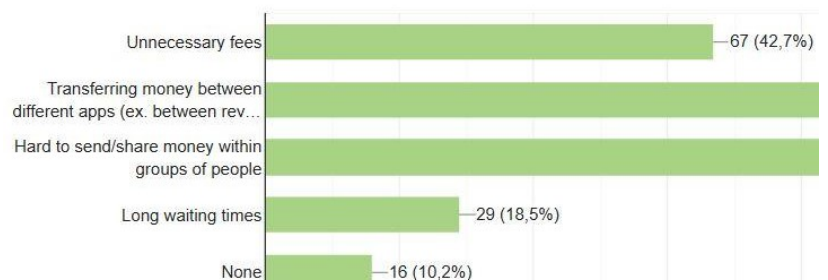
How difficult do you find it to share expenses within a group of people? (1 being not difficult at all and 4 very difficult)

A majority of people find it very or somewhat difficult to share expenses within a group.



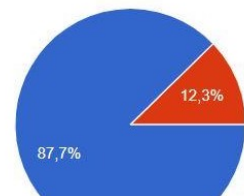
What are the main problems while sharing money?

The main problems while sharing money are making transfers between different apps, finding it hard to share money within groups of people and the unnecessary fees. Few of the answers were also complaining about the long waiting times.



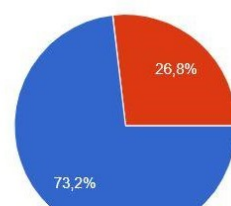
Do you and your friends/family have different banking apps?

The large majority of people doesn't have the same bank or banking apps as their friends or family



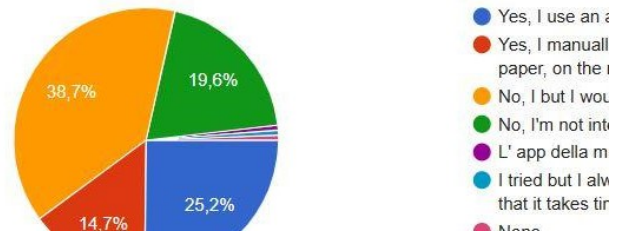
If yes, is it a problem to send/receive money between different services?

Survey shows that when people have different banking apps, it results in difficulties sharing money.



Do you already use expense tracking services?

A lot of people would use an expense tracker but not the majority, because an almost equal amount either already has an alternative system or is not really interested.



Conclusions

The survey confirmed what was already highlighted through the interviews, particularly what we mentioned in [point 6](#) of the interview analysis.

The spread of cards and online banking made sharing money digitally increasingly common and useful. Most people already use such services, however there are some evident complaints regarding the lack of compatibility among different banks and respective apps. Among the various tasks surrounding money sharing, group expense splitting results to be the most difficult due to the lack of applications that provide this feature when the members of the groups use cards from different banks.

User tasks and storyboards

After having identified the needs to be satisfied, we proceeded with the identification of the specific user tasks which our app will cover. The tools we used to understand the needs of the users revealed that focusing on splitting group expenses was the right path to take. For this reason the first tasks we took into consideration were: create a group, split an expense with the group and pay back other members of the group.

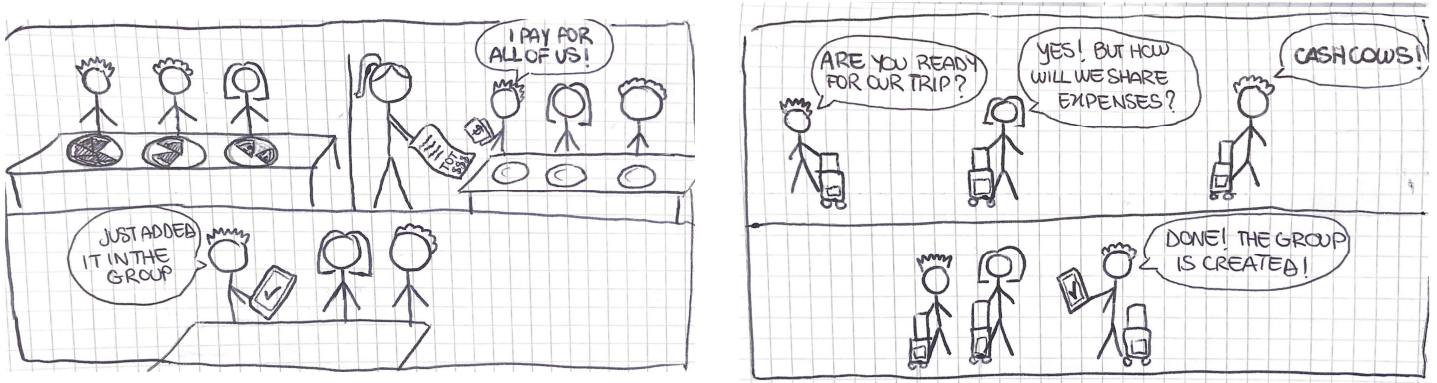
During the course of our first review, we understood that in order to build a useful product we must explore a better way to split group expenses. It was crucial to improve the user experience and the functionalities of the existing apps by making the money transactions automatic.

This very useful feature raised some concerns around security, which needed to be investigated in order to implement it in the appropriate manner to maintain the trust of the users.

Additional interviews (Check the pdf file “Additional Interviews for changes in the user tasks”) revealed that users find the automatic transfers very convenient as long as there is some form of security measure to protect their money. We reached a solution which is a trade off between protecting the users’ money and convenience: once an expense is added to a group, the participants have 48 hours to reject the expense before the transaction is finalized.

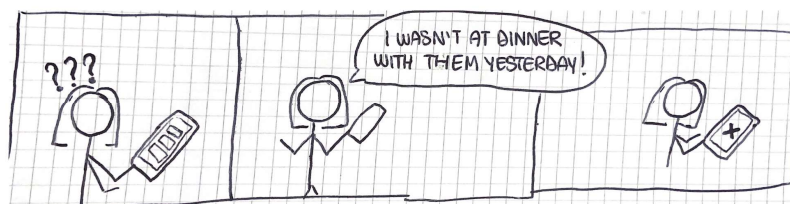
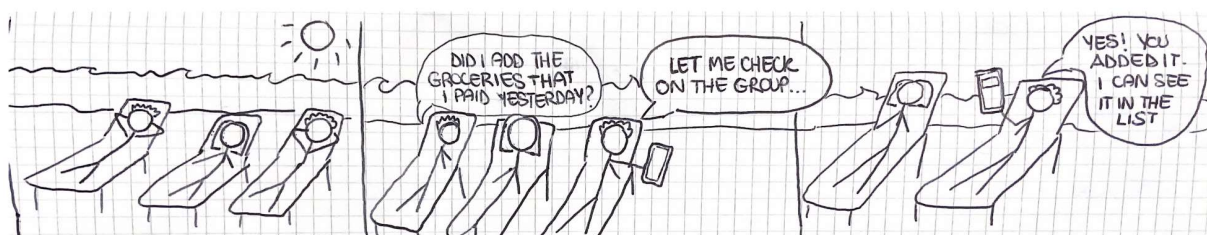
After considering these changes, these are the 4 main tasks that the user will be able to perform within our app:

1. Create groups with friends
2. Add a shared expense to the group
3. Check the expenses made by the members of the group



4. Contest the expense

For each of these main tasks, we then draw the storyboards to better showcase our system, the context and how it can be used.



To see our storyboards more in detail, check [storyboards.pdf](#).

Prototypes

As the project progressed, we moved forward with developing the prototype by sketching the various screens within the app. This allowed us to visualize the interaction flow and ensure that the designed UI was complete, comprehensible, and user-friendly. We initially used a throwaway prototyping approach to quickly gather information on what would be useful for a base prototype. After collecting this information and feedback, we adopted an evolutionary prototyping approach to refine and update the paper model. Subsequently, we translated the

paper prototype into a Figma design for further development and to allow evaluation on an interactive prototype.

Once we consolidated a complete system, we developed our application using Flutter, which enabled us to conduct thorough testing and fully implement the desired features. By using Flutter, we ensured cross-platform compatibility, with a design that references the style and functionality of Android OS (for instance material design and signature widgets like checkboxes).

Evaluation

We conducted a comprehensive evaluation of the app to test usability and system functionality, focusing on the key tasks users needed to perform and identifying potential issues. The evaluation was conducted in an on-field style, employing the "Think Aloud" and "Cooperative Evaluation" methods. We asked users to try to perform the four main tasks while we observed them, noting their actions, expectations, and descriptions of what they were doing. To ensure a thorough evaluation and reduce evaluator bias, multiple members of our team observed and recorded user interactions at different stages of the testing process. This approach enabled us to gather diverse perspectives and make well-informed improvements to the app.

Conclusions

Through extensive user research and iterative design, CashCows has been developed to address the common challenges associated with group expense sharing. Our interviews and surveys revealed a significant need for a user-friendly, compatible, and feature-rich application to manage group expenses efficiently. By offering a comprehensive solution that combines ease of use with powerful features, CashCows is the go-to app for anyone looking to simplify group expense sharing.

Join the herd and experience the convenience of CashCows, where managing and splitting group expenses is made effortless!