

Split

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Abstract

A growing proportion of college students and recent grads are in a shared living situation, characterized by a lack of homeownership and cyclical household costs. Currently, division and management of these household costs are handled on an ad hoc basis or with spreadsheets, requiring constant oversight and assignment of responsibilities. Based on our personal experiences with roommates, we found these existing solutions complex and time-consuming. In the worst-case scenario, resolving expenses strain roommate relationships. Most college students do not need fancy investment tracking or wealth management features often present in existing personal finance applications. Split strips away these excess bells and whistles, targeting the everyday needs of today's students and new graduates.

Product Description

Split simplifies coordination in shared living situations through a personal finance application accessible to users via the Internet. Users can create groups with their roommates and branch off into subgroups. For example, housemates can form a main group for their house and divide into subgroups based on their floor. Certain housemates can retain administrative privileges to mediate and maintain the application. Notifications allow users to remind other household members to fulfill expenses and restock supplies.

Using the expense tracking feature, users can split both group-level costs such as utilities and floor-level costs such as toilet paper for a floor bathroom. Splitting can be done by percentage or dollar amounts, or with various widgets to split costs evenly. Users can upload receipts or documentation of each expense for record-keeping and download spreadsheets of their expenses for personal finance tracking. Groups can set their budget and track their combined spending levels.

In addition, group members can use the supply tracker to ensure that household necessities such as paper towels never run out. Supplies can be split into categories, such as bathroom or kitchen supplies. Based on past restock dates or manual entry, group members will be reminded to replenish tracked items and can maintain an open shopping list to do so. Once a user restocks a supply, they can expense their housemates to split the product cost. Finally, Split keeps track of which users restock goods, to ensure equal commitment by group members to household chores.

Split uses React, Node.js, and MongoDB for frontend and backend code. We use MongoDB to store documents such as users, groups, pictures, and expenses. Additionally, we

heavily use the Materials Icon library for the design of our user interface. For deployment, we use Heroku to launch our application.

Market Research

Our user base is expected to continue to grow steadily over the medium term. We identify the core market being adults in a shared living situation, starting with college students sharing a dormitory or off-campus residence. A 2018 survey by the National Center for Education Statistics found that 19.8 million students were enrolled at US colleges and universities. The Department of Education predicts a 2% increase in the number of undergraduates between 2018 and 2029. In addition, a 2017 survey by Pew Research Center found that over 14 million U.S. adults, or 18% of the adult population, live in some form of shared housing, excluding romantic partners, relatives, or college students aged 18 to 24.

As a whole, the personal finance application market was \$1.02 billion in 2019 and is predicted to grow at a CAGR of 5.7% from 2020 to 2027 to reach \$1.57 billion. The growth in the fintech industry is driven mainly by an increased need to manage the income of consumers and the increase in mobile applications to target this market. In addition, the pandemic has accelerated the adoption of personal finance software because of the rise in online and mobile banking and individuals' need to manage their expenses during the COVID-related economic downturn.

College students and recent graduates are facing incredible financial challenges during the pandemic -- student loan debt has reached a new high in 2020, growing by 2% to nearly \$1.6 trillion, held by 45 million borrowers. Though student loan debt reaches across demographics and ages, college students are increasingly needing personal finance applications to help manage their living expenses in the face of long-term rising student debt.

Stakeholders

We have identified several key stakeholders relating to various aspects of our application: college students and recent graduates, university administrators, landlords, and consumer businesses. Our primary stakeholders are our end-users: college students and recent graduates. As described in the market research section, these stakeholders are looking to simplify their expense management and shared living situation. In addition, college students may have only just gained independence and need guidance on managing their living expenses for the first time. Split addresses these concerns and offers an introductory application.

An intermediary stakeholder could be university administrators. Given that many students live in on-campus housing, dormitories could offer Split as a resource for residents to manage their living expenses and smooth possible disputes among roommates. Off-campus housing is managed by landlords, and Split could be leveraged to allow renters to pay off utility and rent costs promptly. Finally, another secondary stakeholder would be the brands and

businesses hoping to interact and advertise with Split. These businesses would be able to target a very specific demographic with long-term strategic value.

Competition

The fintech space is crowded with personal finance applications, each serving its niche. From peer-to-peer payment to budget planning, the functionality of Split overlaps with existing applications but consolidates many functionalities while providing greater convenience for our target stakeholders.

Cash App and Venmo are two peer-to-peer payment applications that are top of mind when thinking about splitting bills between friends and family. Their convenience and ubiquity are definite strengths, but Cash App and Venmo are less equipped for expense management. In addition, Venmo integrates a social element and Cash App includes an investment platform that muddles the core functionality for housemates. Another fintech niche is that of personal budget planning and bill tracking. Companies such as Intuit, Mint, and Personal Capital all offer an application to manage spending, but do not provide bill splitting capabilities. Finally, there are niche bill splitting applications such as Tab for splitting the cost of a meal or Splid for overall group expense management, but neither addresses the struggles unique to expense management in a shared living situation.

Split aims to take the most applicable features of each competitor and uniquely position itself in its functionality across shared-living management.

Cost and Revenue Model

Our costs will come mainly from our use of cloud infrastructure, such as AWS for web hosting or MongoDB to store data. Though we are currently using the free tier of these software services, we may incur additional costs as we scale. In addition, many payment APIs charge fees for payment processing. Stripe charges 2.9% + \$0.30 per transaction but offers custom pricing for businesses with increased volume or a unique business model.

Our revenue model is based on in-app advertisements. Given our target end-user, a paid application or subscription model would not achieve strong adoption rates. In addition, we can look to the other monetization models of competitor applications for inspiration.

The effective cost per mile app monetization model rewards app publishers based on total impressions rather than on clicks or action, allowing for predictable revenue and a reduced risk of mobile ad fraud. Based on this app monetization model, interstitial and banner ads would be the most effective display style. Interstitial ads occupy an entire smartphone screen and disrupt the user experience, but earn \$3.50 per 1,000 impressions based on case studies. Banner ads are less distracting for the users, but earn \$0.20 - \$2.00 per 1,000 impressions. We can optimize the

ads using an algorithmic auction method similar to Facebook's, where ads are placed to maintain a great user experience.

Other fintech applications make money in varied ways. Venmo and Cash App make money by charging on instant transfers from the app balance to the user's bank, a 1% and 1.5% fee on the amount transferred, respectively. Mint makes money through referral fees. By partnering with other financial technology companies, the app aggregates and promotes other products and receives a fee every time a user signs up. Mint also aggregates and sells anonymized consumer data. Many other fintech companies also offer a freemium model where users can pay to upgrade their accounts for better features or reduced ads.

A combination of these revenue streams may be ideal for Split, but our primary focus is on the user experience and creating an application to optimize shared living situations.

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